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NATIONAL DAM SAFETY PROGRAM. SALISBURY MILLS DAM, INVENTORY NUM--ETC(U)
APR 78 C H BENN

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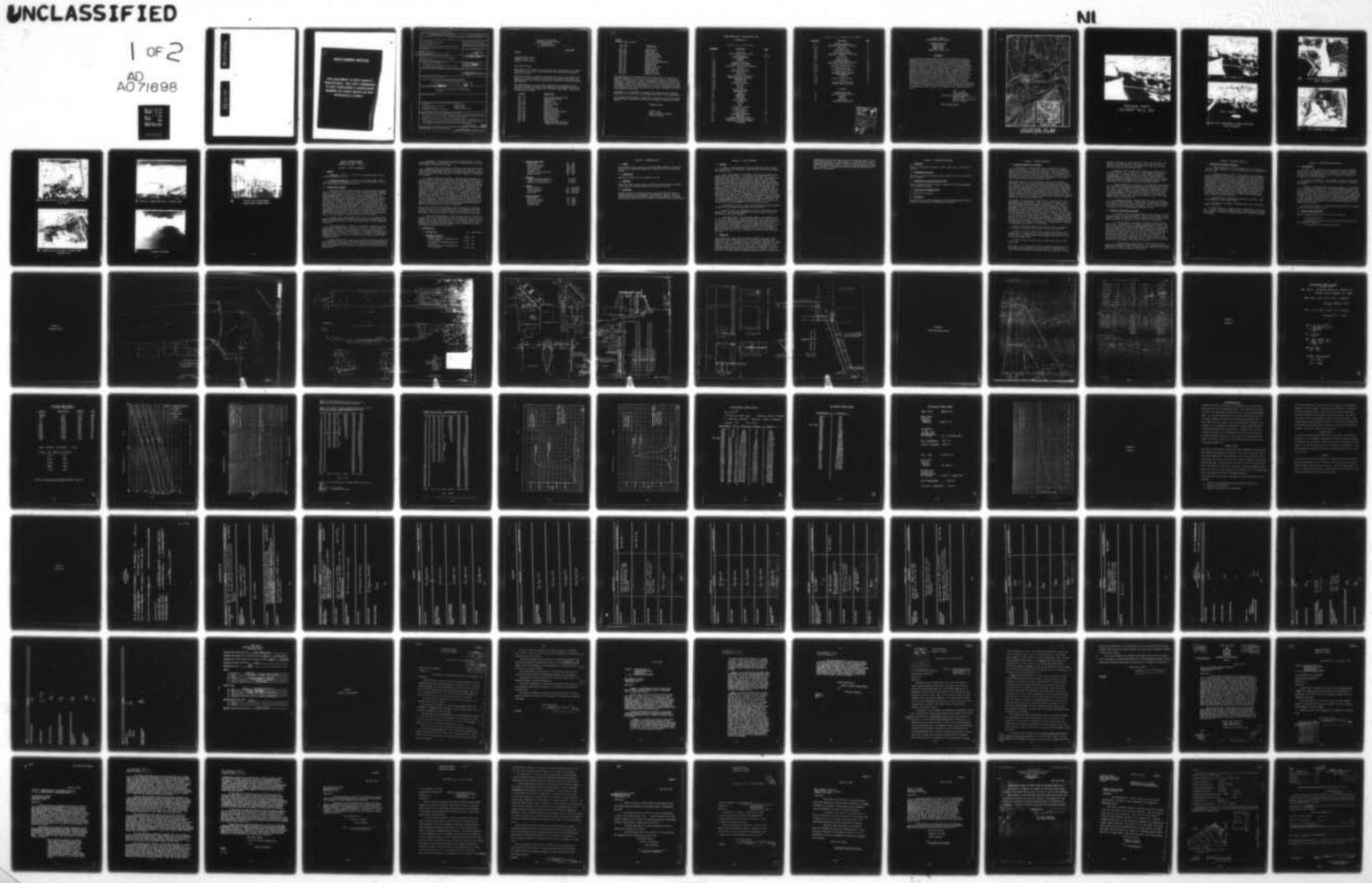

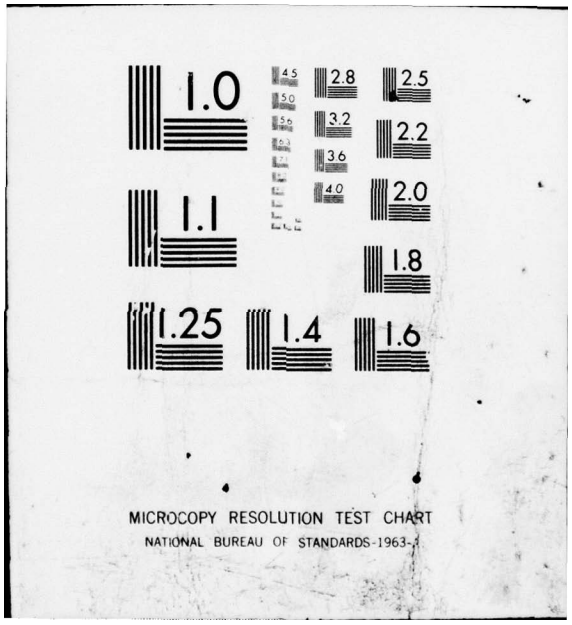
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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Phase I Inspection Report Salisbury Mills Dam Moodna Creek Basin, Orange County, New York Inventory No. N.Y. #4		5. TYPE OF REPORT & PERIOD COVERED Phase I Inspection Report National Dam Safety Program 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) (10) Clark H. Benn, Colonel U.S. Army		8. CONTRACT OR GRANT NUMBER(s) (12) 98 p.
9. PERFORMING ORGANIZATION NAME AND ADDRESS New York District Army Corps of Engineers 26 Federal Plaza New York, New York 10007 Army Engineer District, NY		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army 26 Federal Plaza / New York District, CofE New York, New York 10007		(11) 12. REPORT DATE 19 April 1978 13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; Distribution unlimited.

(6) National Dam Safety Program. Salisbury Mills Dam, Inventory Number 4, [redacted] Moodna Creek Basin, Orange County, New York. Phase I Inspection Report,

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dam Safety
National Dam Safety Program
Visual Inspection
Hydrology, Structural Stability
Moodna Creek
Orange County
Salisbury Mills Dam

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

Salisbury Mills Dam was judged to be unsafe, due to deterioration at the left abutment, and serious maintenance deficiencies. Lowering of the impoundment and continuous surveillance were recommended.

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DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, NEW YORK
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10007

2 OCT 1978

NANEN-F

Honorable Hugh L. Carey
Governor of New York
Albany, New York 12224

Dear Governor Carey:

The purpose of this letter is to inform you of a clarification of the guidelines used by this office in assessing dams under the National Program of Inspection of Dams.

Office of the Chief of Engineers has recently provided a clarification that dams with seriously inadequate spillways are to be assessed as unsafe, non-emergency, until more detailed studies prove otherwise or corrective measures are completed.

The following dams in your state have previously been assessed as having seriously inadequate spillways, with capability to pass safely only the percentage of the probable maximum flood as noted in each report. They are now to be assessed as unsafe:

I.D. NO.	NAME OF DAM
N.Y. 59	Lower Warwick Reservoir Dam
N.Y. 4	Salisbury Mills Dam
N.Y. 45	Amawalk Dam
N.Y. 418	Jamesville Dam
N.Y. 685	Colliersville Dam
N.Y. 6	Delta Dam
N.Y. 421	Oneida City Dam
N.Y. 39	Croton Falls Dam
N.Y. 509	Chadwick Dam (Plattenkill)
N.Y. 66	Boyds Corner Dam
N.Y. 397	Cranberry Lake Dam
N.Y. 708	Seneca Falls Dam
N.Y. 332	Lake Sebago Dam
N.Y. 338	Indian Brook Dam
N.Y. 33	Lower(S) Wiccopee Dam (Lower Hudson W.S. for Peekskill)

NANEN-F
Honorable Hugh L. Carey

I.D. NO.	NAME OF DAM
N.Y. 49	Pocantico Dam
N.Y. 445	Attica Dam
N.Y. 658	Cork Center Dam
N.Y. 153	Jackson Creek Dam
N.Y. 172	Lake Algonquin Dam
N.Y. 318	Sixth Lake Dam
N.Y. 13	Butlet Storage Dam
N.Y. 90	Putnam Lake (Bog Brook Dam)
N.Y. 166	Pecks Lake Dam
N.Y. 674	Bradford Dam
N.Y. 75	Sturgeon Pool Dam
N.Y. 414	Skaneateles Dam
N.Y. 155	Indian Lake Dam
N.Y. 472	Newton Falls Dam
N.Y. 362	Buckhorn Lake Dam

The classification of "unsafe" applied to a dam because of a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean, however, that based on an initial screening, and preliminary computations, there appears to be a serious deficiency in spillway capacity so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream from the dam.

Consequently, it is advisable to implement the recommendations previously furnished in the reports for the above-mentioned dams as soon as practicable.

It is requested that owners of these dams be furnished a copy of this letter and that copies be permanently appended to all reports previously furnished to you.

Sincerely yours,

CLARK H. BENN
Colonel, Corps of Engineers
District Engineer

MOODNA CREEK BASIN - SALISBURY MILLS DAM

INVENTORY NO. 4

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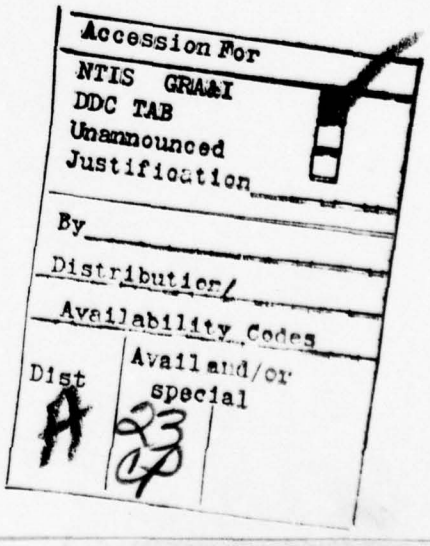
APPENDIX

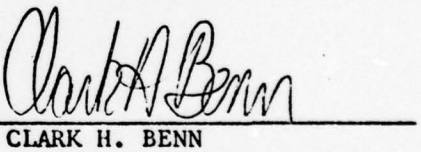


PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM

SALISBURY MILLS DAM
NEW YORK STATE
ORANGE COUNTY
MOODNA CREEK
INSPECTED 5 JANUARY 1978

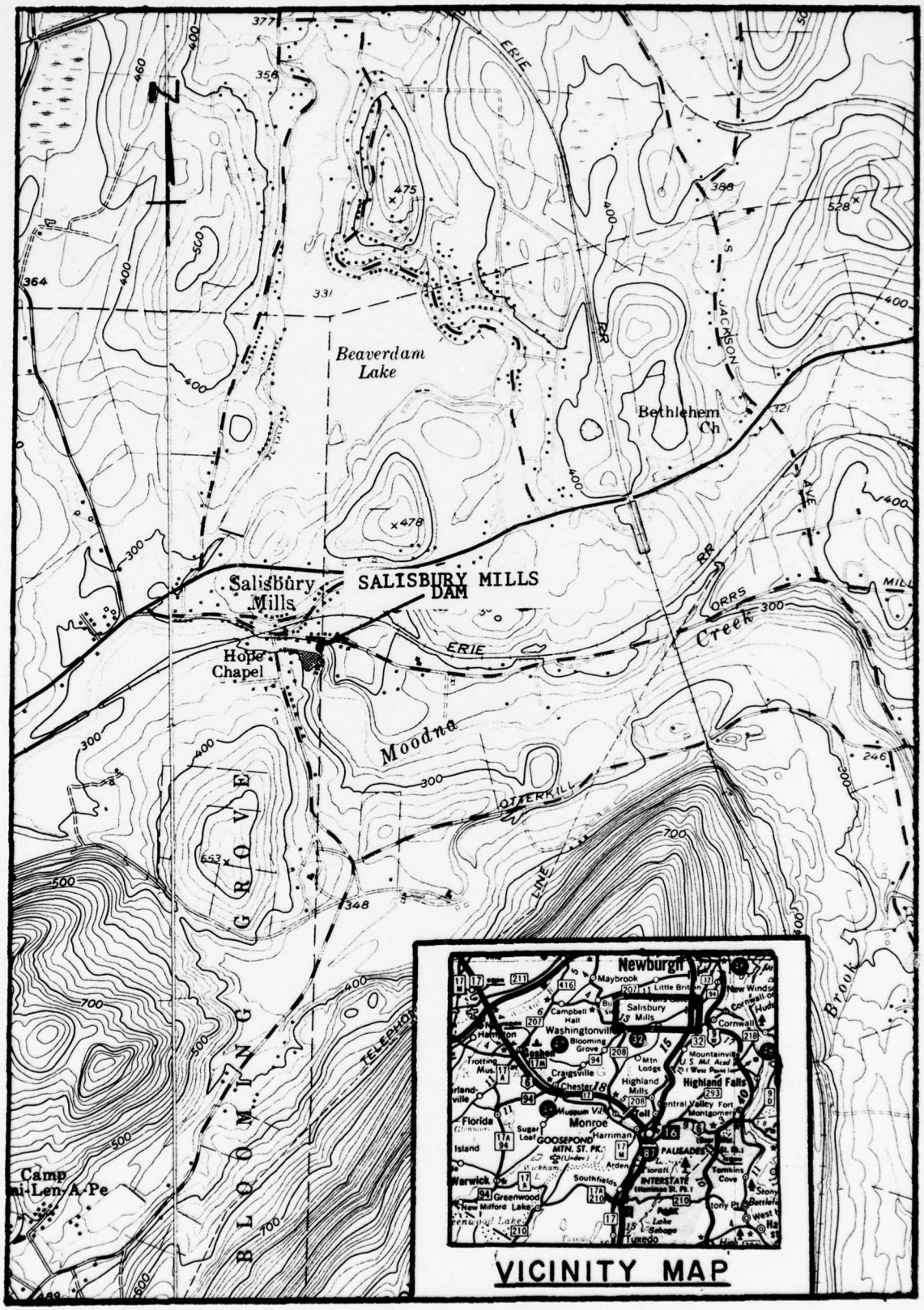
ASSESSMENT

The Salisbury Mills Dam exhibits serious loss of supportive stone and leakage at the left masonry abutment tie-in wall and serious maintenance deficiencies which render the dam unsafe. The dam will be over-topped by the probable maximum flood or the standard project flood. Although the dam is founded on ledge rock and designed for over-topping the deteriorated condition at the left abutment would cause failure during over-topping. In addition, check of original stability computations indicates instability under conditions of the PMF or SPF. Although flood wave analysis indicates present downstream development would not be affected by a break in the dam, the possibility of serious injury or death to individuals in the downstream flood plain at the time of a break, exists. For this reason it is recommended that the impoundment be lowered immediately and a program of around the clock surveillance be initiated during periods of heavy flow. In addition missing manhole covers and deteriorated timbers on the intake structure should be replaced immediately. If the dam is not repaired, future development in the downstream area should be carefully monitored to assure that it does not fall within the flood plain.

Approved by: 

CLARK H. BENN
Colonel, Corps of Engineers
District Engineer

DATE: 19 April 1978



LOCATION PLAN

OVERVIEW PHOTO
SALISBURY MILLS DAM

① DAM (LOOKING N-E)

② GATE HOIST MECHANISM AT INTAKE STRUCTURE (RIGHT ABUTMENT)

③ TRASH RACK AT INTAKE STRUCTURE
(RIGHT ABUTMENT)

④ LEFT ABUTMENT TIE IN WALL

⑤ VOID AND SEEPAGE AT D/S FACE LEFT ABUTMENT TIE IN WALL

⑥ DEMOLITION OF OLD MILL AT RIGHT BANK (LOOKING S-W)

⑦ PARTIALLY DEMOLISHED MILL AT RIGHT BANK

⑧ LOOKING UPSTREAM

⑨ TYPICAL D/S DEVELOPMENT
(TAKEN FROM STREAM BANK)

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
SALISBURY MILLS DAM I.D. No. 4

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL:

a. Authority. Authority is provided by the National Dam Inspection Act, Public Law 92-367, 1972.

b. Purpose of Inspection. Evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.

1.2 DESCRIPTION OF PROJECT:

a. Description of Dam and Appurtenances - The Salisbury Mills Dam was built in the early 1920's to replace a wooden dam which existed at approximately the same location. The dam consists of a concrete spillway 132 feet long and approximately 27 feet high with concrete training walls. The right abutment tie-in wall, approximately five (5) feet above the crest of the dam, is concrete and incorporates a gated intake structure and associated trash rack leading to a six (6) foot diameter steel penstock and outlet structure. The dam was originally constructed to provide water and generate power for the Holden Paper Company of Newburgh, New York. The old mill has since been razed and the condition of the penstock and outlet structure was not discernible upon inspection. The left abutment tie-in wall is approximately five (5) feet above the crest of the dam and is of dry masonry construction, concrete faced on the upstream side and portions of the top. The left abutment contains of 48 inch blow-off, however, the operation mechanism is in a condition of disrepair and the gate is inoperable.

b. Location - The Salisbury Mills Dam (I.D. No. 4) is located in the Hamlet of Salisbury Mills in the Town of Blooming Grove, Orange County, New York, as shown on Plate No. 1. The latitude is 41°-25.7' and the longitude is 74°-7.0'.

c. Size Classification - Storage is 115 acre-feet at normal pool elevation (top of spillway) with a pool area of 18 acres. The pool elevation corresponding to the top of the non-overflow section provides storage of 500 acre-feet and a pool area of 56 acre-feet. The height of the dam at the maximum section from the top of the abutment tie-in walls to the approximate stream bed elevation is 29 feet. On the basis of the above the dam size is classified as small.

d. Hazard Classification - The dam is classified as hazard category III. This information is based upon information provided by New York State Department of Environmental Conservation. The inspection was performed because of the State's concern about the integrity of the dam and the correctness of the hazard rating.

e. Ownership - As noted above the dam was originally built for the Holden Paper Company of Newburgh, New York. The current owner is the Cornwall Paper Mill of Cornwall, New York.

f. Purpose of Dam - The dam was constructed to generate power for the paper company plant which was located at the right bank. The mill is presently partially demolished. The small impoundment upstream from the dam is used for recreation by homeowners and as a source of water for firefighting in the Hamlet.

g. Design and Construction History - The existing dam was built in the early 1920's to replace a frame timber dam with masonry abutments which had previously existed. The original concept for the dam was to provide water and generate power for the paper mill operation. Plans were approved by the State Engineer on 25 August 1921. The accepted design plans as submitted by William T. Field, Consulting Engineer of New York City are included for reference in Appendix A. There are however, substantial deviations noted in the field from the plans as filed. It appears that the alignment of the present dam is the same as the original structure, not at the bend of the Creek as indicated on Sheet 1. In addition the left abutment, indicated on Sheet 2 as a "U" shaped concrete structure to be earth filled is actually a dry masonry wall, possibly the same wall that existed for the original dam. The 48 inch diameter blow-off, in incorporated in the left abutment tie-in wall, is not indicated on the plans and was incorporated at the request of the New York State Conservation Commission as a means of providing drawdown at times of high water.

Construction records are not available, however, inspection trip reports filed by the State in 1921 indicates the dam to be founded on slate ledge rock sloping down in the upstream direction at approximately 30° to the horizontal. The spillway section is keyed five (5) feet into the bedrock.

h. Normal Operating Procedures - The original concept for operation of the project was to provide water through the intake structure at the right abutment for the paper making operation of the Holden Paper Company and to generate power by means of a water wheel. A flood control gate at the left abutment wall and associated hoist mechanism was incorporated to prevent overtopping during peak run-off periods.

1.3 PERTINENT DATA:

a. Drainage Area	129	square miles
b. Discharge at Damsite		
Maximum known flood	12,000	CFS
Spillway capacity at maximum design pool elevation.	15,240	CFS
Wall capacity at maximum design pool elevation.	1,920	CFS
Total dam capacity at maximum design pool elevation.	17,160	CFS

c. Elevation (above MSL)

Top of dam	295	feet
Maximum design pool	300	feet
Flood control pool	290.4	feet
Recreation pool	290.4	feet
Spillway crest	290.4	feet
Streambed at dam centerline	266	feet
Maxium tailwater	268	feet

d. Reservoir

Length of maximum design pool	3.3	miles
Length of recreation pool	2.4	miles
Length of flood control pool	2.4	miles

e. Storage

Recreation pool	115	acre-feet
Flood control pool	115	acre-feet
Design surcharge	1,470	acre-feet
Top of dam	500	acre-feet

f. Reservoir Surface

Top of dam	56	acres
Maximum design pool	224	acres
Flood control pool	18	acres
Recreation pool	18	acres
Spillway crest	18	acres

SECTION 2 - ENGINEERING DATA

2.1 DESIGN:

With exception of the exception of the filed plans, Appendix A and spillway stability computations, Appendix B, design data are not available for review.

2.2 CONSTRUCTION:

Construction records are not available for review.

2.3 OPERATION:

There are no operating instructions available to indicate proper operation of the blow-off or intake structure which served the old mill.

2.4 EVALUATION:

The data required for detailed analysis of the total structure are not available as historical documents. The uncertainty related to the actual as-built condition of the structure, particularly in regard to the existing structure, indicates that the validity of historical data is questionable.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS:

a. General - The Salisbury Mill Dam was inspected by Corps of Engineers and New York State Department of Environmental Conservation personnel on 5 January 1978.

b. Dam - The dam appears to conform to the drawings included in this report except as noted above. It is apparent that the dam has not been maintained since a fire razed the mill on the right bank. The intake structure at the right bank has not been maintained and the head gate hoist mechanism is padlocked in a closed position. Manhole covers are missing, guard railings are gone and deteriorated wooden boards above the full observation well pose a servious safety hazard to anyone who may wander into the area. A representative of the owner indicated that the head gate hoist mechanism is still operable although the condition of the penstock and outlet structure was not apparent. All visible concrete exhibited marked surface deterioration. Water flowing over the spillway prevented a close examination of the conrete crest. The masonry tie-in wall at the left abutment exhibited a huge void in the downstream face approximately 20 feet wide, six (6) feet high and four (4) feet deep, into the face. A signficant amount of through seepage was observed. The flood gate hoisting mechanism at the left abutment was partially destroyed and not operable. It is locked in a closed position. No mis-alignment of the structure was observed.

c. Appurtenant Structures - Aside from the associated penstock through the old mill and discharge no appurtenant structures exist.

d. Reservoir Area - The impoundment is confined to the banks of the Moodna Creek. The overburden throughout the area is relatively thin and the slopes are steep and overgrown.

e. Downstream Channel - The downstream channel in the immediate area of the dam is ledge rock with steep overgrown side slopes. The creek is a dog-leg right immediately downstream from the dam. The channel was observed for a distance of approximately two (2) miles downstream from the dam. Overburden in the area observed is thin with frequent rock outcrops. Development along the creek begins approximately one-half mile downstream on high banks above the creek bed. During periods of peak flows storage of water is accommodated in the low lying plains between the steep slopes and the creek.

3.2 EVALUATION:

Visual inspection revealed the left masonry abutment tie-in wall to have significant seepage and extensive loss of stone on the downstream face which could result in imminent failure at the abutment. The dam is evidently founded on ledge rock and failure of the wall would not undermine the spillway section or the road at the left bank. Visual reconnaissance of the immediate downstream area indicates an absence of development in the floodplain which would be affected by a partial failure of the dam. A fire in the mill at the right bank and subsequent demolition has left the dam in an

unmaintained condition with twisted steel and miscellaneous debris lining the intake structure at the right abutment. In addition, lack of maintenance, missing manhole covers and deteriorated wood planking over water filled observation wells presents a hazard to anyone approaching the structure. The ability to operate the outlet works and the condition of the penstock is questionable.

SECTION 4: OPERATIONAL PROCEDURES

4.1 PROCEDURES:

There is no operational procedure to control lake level or outflow from the lake.

4.2 MAINTENANCE OF THE DAM:

The dam is in a state of disrepair and no attempt to correct the deficiencies is apparent.

4.3 MAINTENANCE OF THE OPERATING FACILITIES:

There has apparently been no attempt to maintain the operating equipment in the original condition.

4.4 DESCRIPTION OF WARNING SYSTEM:

No warning system is present.

4.5 EVALUATION:

The condition and lack of maintenance of the operating equipment prevent operation of the controls for lowering the lake level.

SECTION 5: HYDROLOGY/HYDRAULIC

5.1 HYDROLOGIC EVALUATION OF FEATURES:

a. Design Data - Salisbury Mills Dam was designed to discharge a peak flow of 17,000 CFS. A spillway length of 132 feet and a dam wall length of 65 feet were provided for this purpose. The spillway elevation was set at 290.4 feet above mean sea level (MSL). The wall section of the dam was set at 4.6 feet above the spillway crest, at elevation 295 feet above MSL. The original design allowed for overtopping of the dam wall with no major adverse effects during major floods.

The primary function of the Salisbury Mills Dam was the production of hydropower. The structure was not designed for significant flood detention. However, for the purpose of this investigation, the design features were analyzed with respect to their flood control potential. This potential was investigated through the development of the probable maximum flood (PMF) for the watershed and the subsequent routing of the PMF through the resevoir system. The PMF is that hypothetical flow induced by the most critical combination of precipitation, minimum infiltration losses, and concentration of run-off at a specific location, that is considered reasonably possible for a particular drainage area.

The drainage area contributing to Moodna Creek at Salisbury Mills Dam is approximately 129 square miles. Snyder coefficients, T_p and C_p, were developed through watershed modeling. An average $C_p = .586$ and $T_p = 9.14$ were established to define the basic hydrologic working tool, the unit hydrograph. In light of recent guidelines for determining the probable maximum precipitation (Hydrometeorological Report No. 51 - Sept. 1976), the PMP index rainfall was determined to be 23.5 inches for a 24 hour duration, 200 square mile basin. The percentages of the index rainfall applied to other durations were interpolated from the plot of drainage area versus percent of 24 hour, 200 square miles (See Appendix). The computed PMF peak flow was 88, 340 CFS. After routing the PMF through the impounded storage, the peak flow was reduced to 59,290 CFS. A plot of the PMF inflow and outflow hydrographs is included in the Appendix. Assumptions made concerning the discharge-storage capacity of the dam were:

(1) That the initial storage of the reservoir prior to the PMF was 115 acre-feet at spillway crest elevation of 290.4 feet above MSL.

(2) That the 132 feet spillway and 65 feet wall are active in discharging flows. Although a four (4) foot diameter outlet is part of the dam structure, lack of maintenance and surveillance precludes its use in actively discharging flows.

(3) That the side spillway for debris removal does not act to discharge flows.

The ability of the Salisbury Mills Dam to discharge the standard project flood (SPF) was also evaluated. The SPF peak flow of 40,940 CFS was routed through the impounded storage and reduced to 36,400 CFS. The SPF

outflow is indicative of a pool elevation of 305.6 feet above MSL. The dam wall is overtopped by 10.6 feet, the spillway crest by 15.2 feet. The PMF outflow of 59,290 CFS is equivalent to 16.1 feet over the dam wall (20.7 feet above the spillway crest).

b. Experience Data - Salisbury Mills Dam has been operational for more than 50 years. The structure has not been manned or inspected on a regular basis. No formal records of reservoir stage have been kept. No stream gage exists in the vicinity of the dam. A flow of nearly 12,000 CFS has been estimated for the site during August 1955 by a hydrologic model analysis of Moodna Creek by Water Resources Engineers (WRE - "Hydrologic Flood Routing Model for Lower Hudson River Basin").

c. Visual Observations - At the time of the inspection, approximately four (4) inches of water was discharging over the spillway (pool elevation 290.7 feet). The upstream face of the spillway was obstructed by a large tree trunk. Heaps of rubble from the demolished mill buildings obscured the outlet throughout its entire length. The gate control for the outlet was non-operational at the time of the inspection. The downstream channel bed was clear of debris except along the mill ruins. The channel showed no sign of excessive scour.

d. Overtopping Potential - The elevation of the top of Salisbury Mills Dam is 295 feet above MSL. A peak outflow of 5,055 CFS corresponds to a reservoir elevation at the top of the dam. The PMF outflow of 59,290 CFS results in the overtopping of the dam by 16.1 feet. The SPF outflow of 36,430 CFS results in overtopping the dam by 10.6 feet.

5.2 HYDRAULIC EVALUATION OF FLOOD WAVE:

a. General - For the dam break analysis, the flood waves for both total and partial failures were computed. Since this structure is concrete founded on ledge rock except for the left abutment (which is made of stones grouted together) the condition of partial failure is more probable.

b. Partial Failure - The results for partial failure indicate that there is little potential for damages to downstream structures. The first location assessed is 2100 feet downstream of the dam. At this point there is a house which is about 20 feet higher than the stream bed and the flood wave depth is about five (5) feet. The second house is 3300 feet downstream of the dam. This house is located 15 feet above the stream bed and the wave at this section is six (6) feet deep. The third house is 4600 feet downstream and is situated 10 feet above the stream bed. The wave at this point would be about 5½ feet deep. Finally, the last house in question is 10,500 feet downstream, seven (7) feet above the stream bed, and the flood wave depth is six (6) feet at this point.

c. Total Failure - In the event of total failure there is a potential for damages to downstream structures. The last house (10,500 feet downstream of the dam) is seven (7) feet above the stream bed, and the wave would be about 8½ feet in depth at this location.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY:

a. Visual Observations - No mis-alignment of the structures was observed. Water flowing over the spillway prevented a close inspection of the crest slab.

b. Design and Construction Data - Design data are not available except as presented in this report. Construction data are not available. Dam sections and calculations inclosed as Appendices A and B have been reviewed and checked for the condition indicated. The resultant of all forces was found to fall at the foward boundary of the middle third of the foundation. This condition is acceptable provided no uplift due to seepage exists. A keyed section into rock should act as a cut-off if it extends sufficiently deep and is suitably sealed and hence there should be no uplift. However, the adequacy of these seals is not known and if any appreciable seepage exists, the condition where the water level is at elevation 326.4, as indicated does not meet current standards. At water levels above elevation 326.4, i.e., PMF or SPF structural computations indicate spillway instability.

c. Operating Records - Operating records are not available. Owner is not operating or maintaining the dam.

d. Post Construction Changes - There have been no post construction changes to the dam.

e. Seismic Stability - Seismic stability computations are not available. The dam is located in seismic zone one (1) and as such are assumed not to present a hazard from earthquake unless static stability conditions are marginal.

SECTION 7: ASSESSMENT/REMEDIAL MEASURES

7.1 DAM ASSESSMENT:

a. Safety - This dam exhibits serious operational and maintenance deficiencies. The left masonry tie-in abutment wall exhibits extensive loss of stone at the downstream face and significant seepage and is considered to be in imminent danger of failure. The dam is considered to be unsafe in its present condition.

b. Adequacy of Information - The information available is inadequate for complete analysis of the dam. The validity of avaiable information is questionable.

c. Urgency - Although the dam is assessed as unsafe it is considered to be a non-emergency situation not requiring any immediate action to protect current downstream development. Future downstream development, if not closely controlled could result in raising the potential hazard of the dam. The owner of the dam was notified by the State DEC letter of 17 January 1978 to lower the water surface behind the dam. This action is considered urgent in order to protect people who maybe in the low areas downstream adjacent to the stream banks. In addition, it is essential that manhole covers and wooder well covers on the intake structure be replaced immediately to preclude a serious accident.

d. Necessity for Phase II - Additional investigations are not required to determine that the dam is unsafe.

7.2 POSSIBLE REMEDIAL MEASURES:

Possible remedial measures include, but are not limited to:

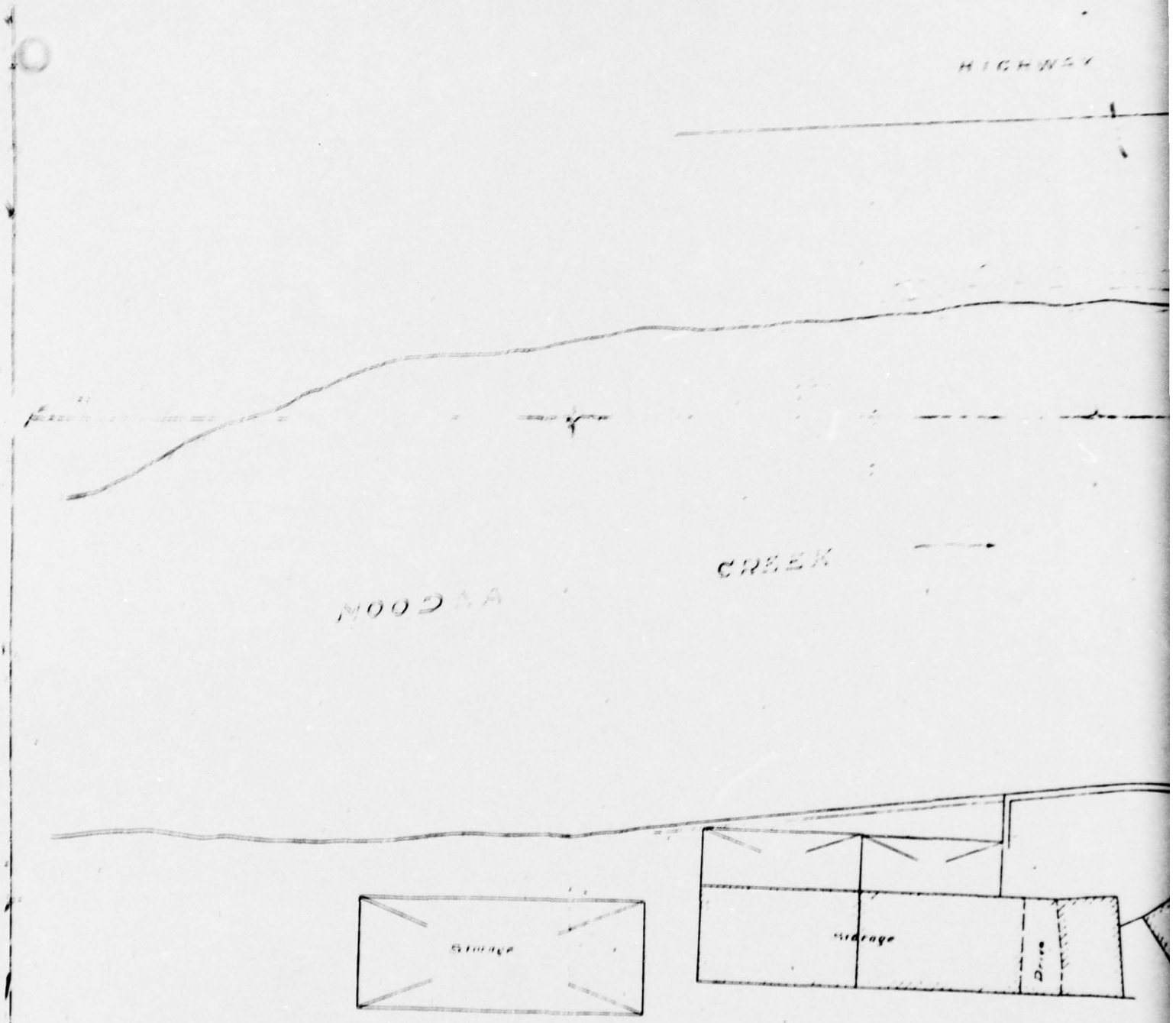
(1) Draining the pool

(2) Breaching or removing the dam and restoring the creek to the pre-construction conditions.

(3) Repairing the left abutment tie-in wall.

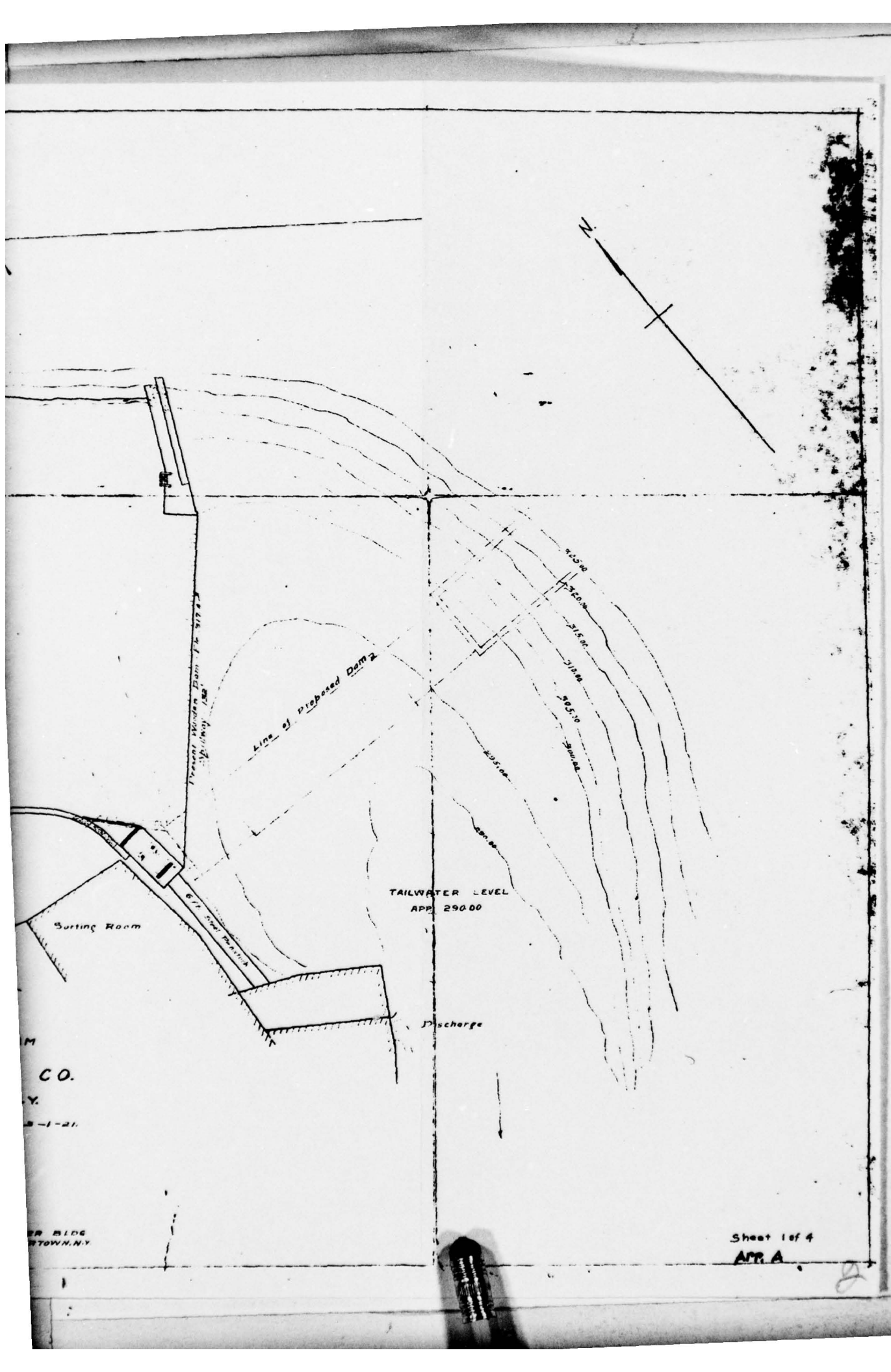
APPENDIX A

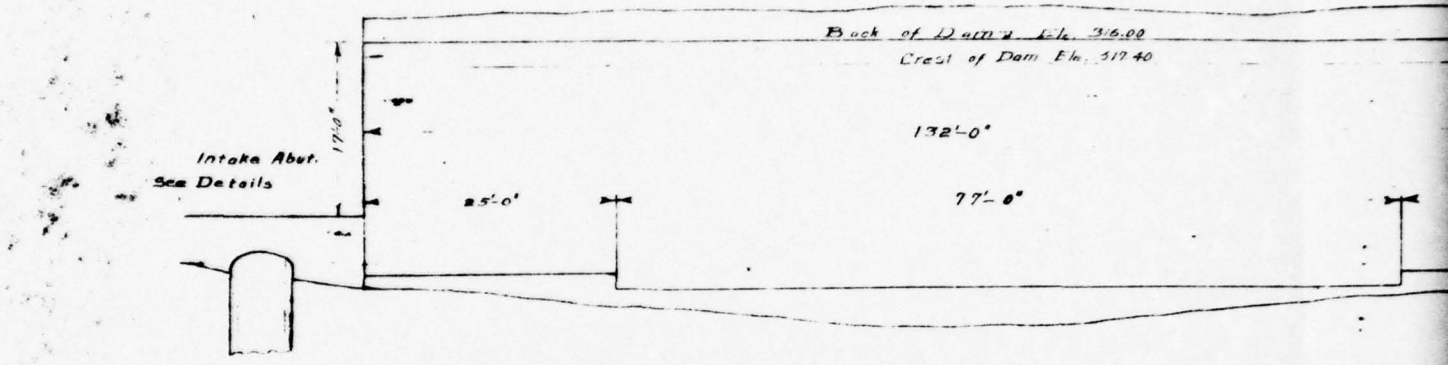
CONSTRUCTION PLANS



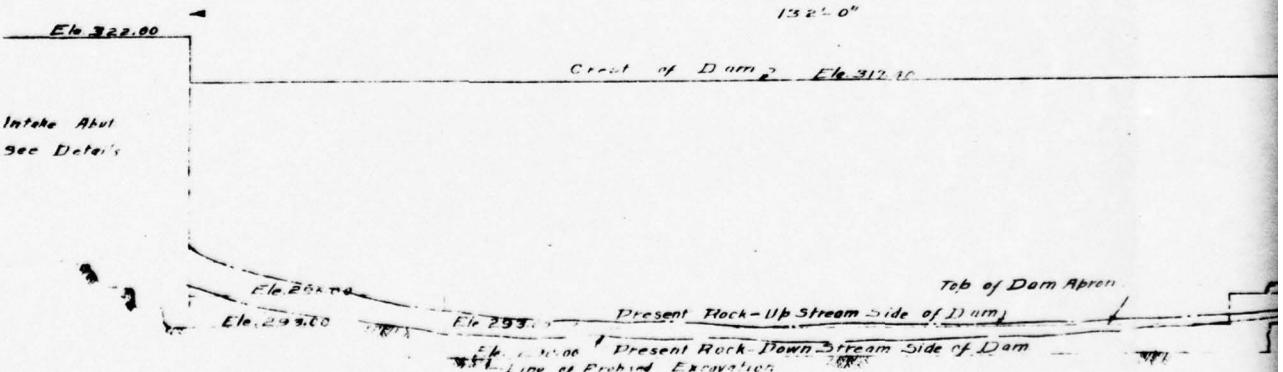
PROPOSED DAM
FOR
HOLDEN PAPER C
AT
SALISBURY MILLS, N.Y.
ORANGE CO
SCALE 1"=20

WILLIAM T. FIELD.
CONSULTING ENGINEER
280 BROADWAY
NEW YORK, NY
FLOWER
WATERTO

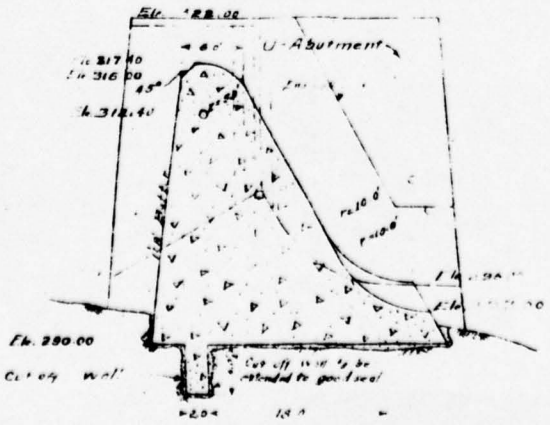

Line of Proposed Dam 2
TAILWATER LEVEL
APP. 290.00
Sorting Room
Discharge
Sheet 1 of 4
APP. A



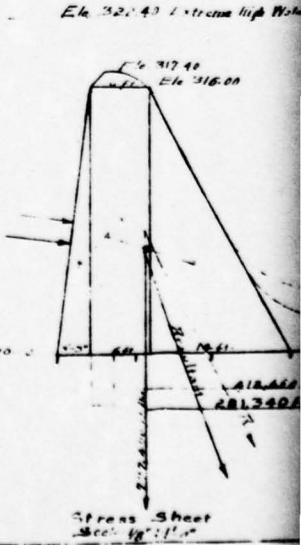
Plan of Dam

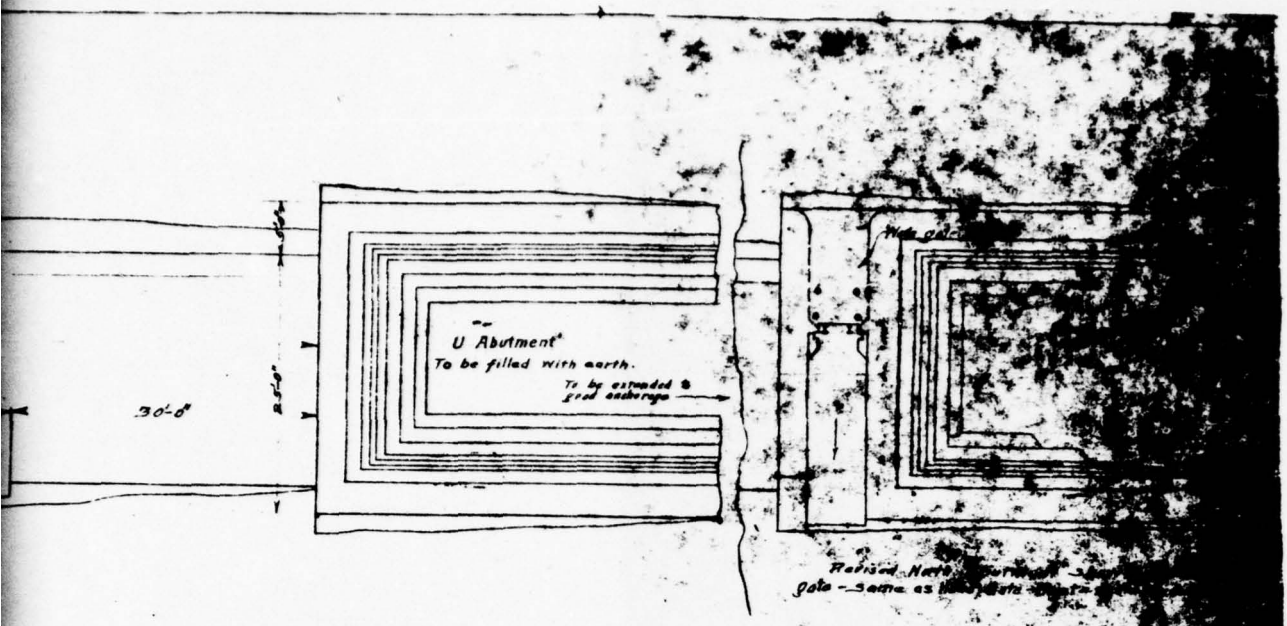


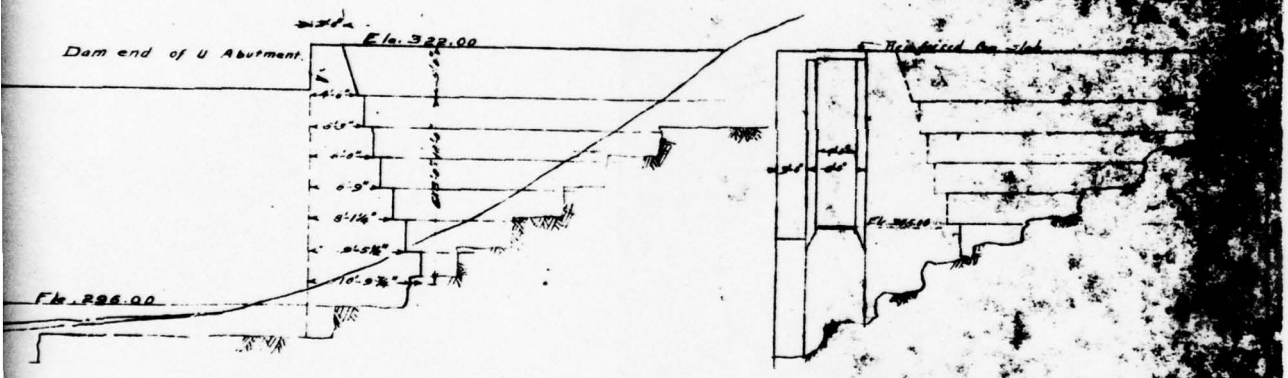
Profile on Line of Dam



Typical Section Thru Dam.



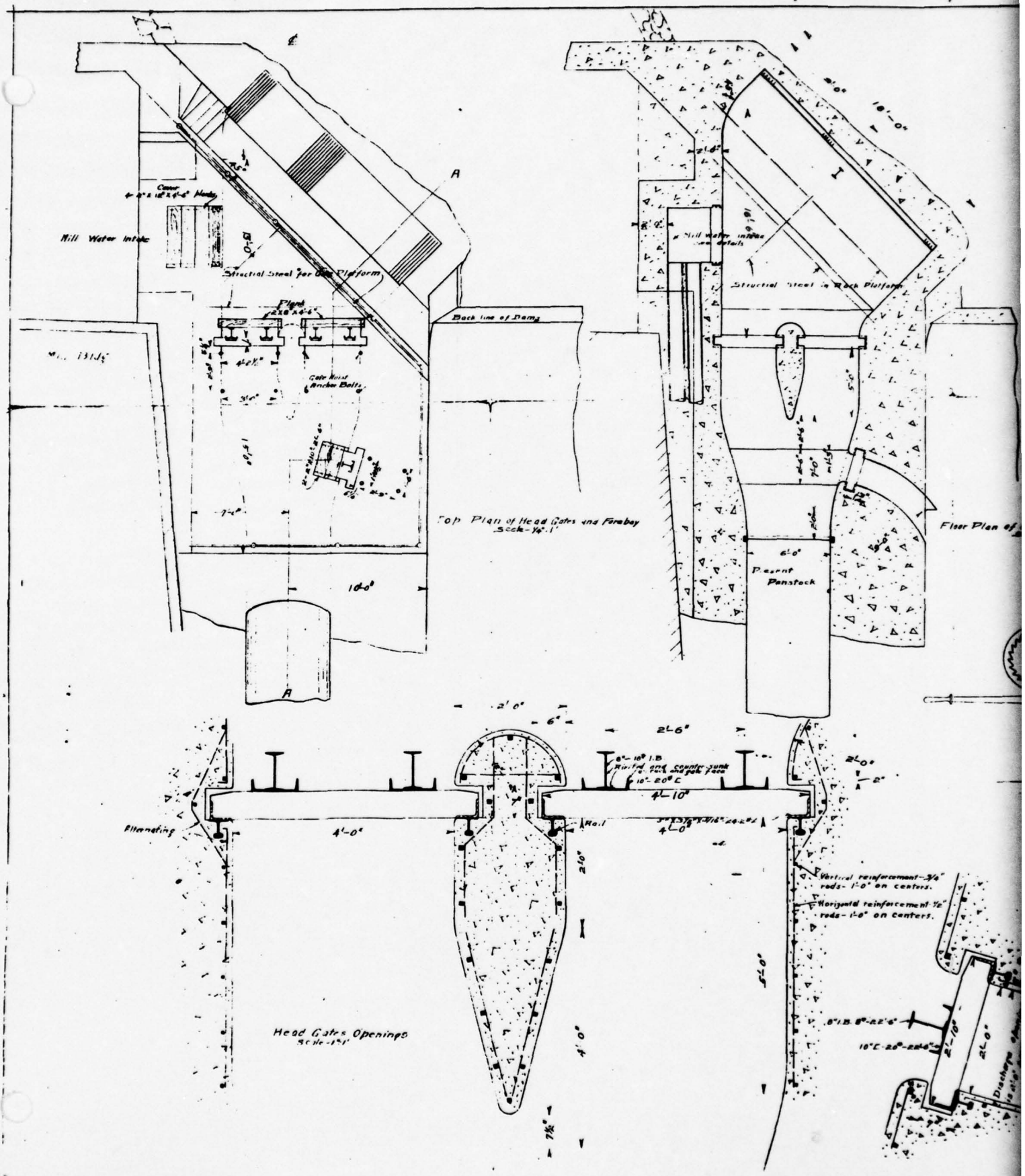


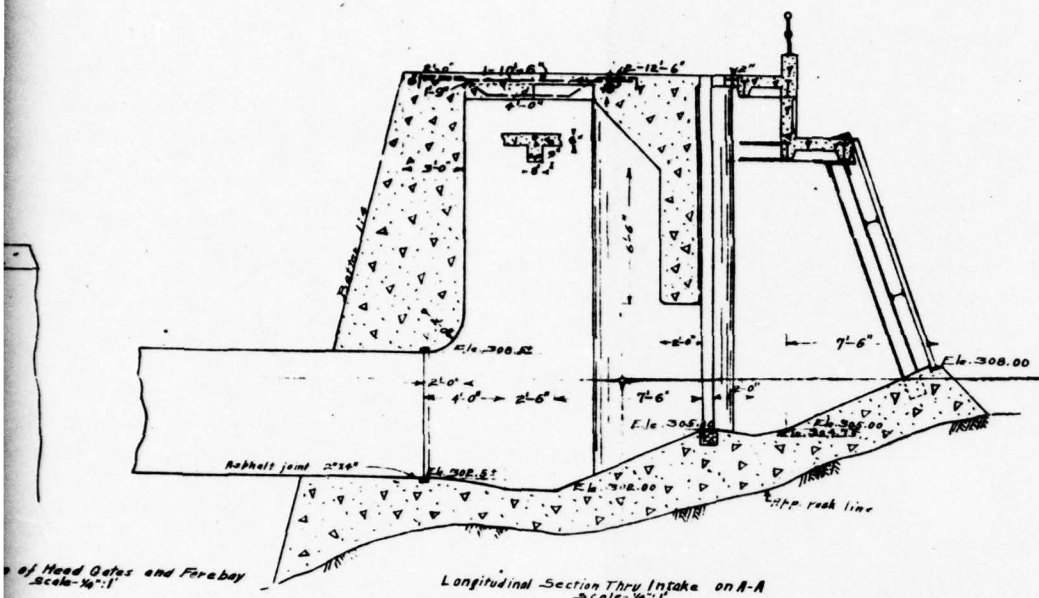


Down stream elevation.

Section Thru
Sides of U Abutment.

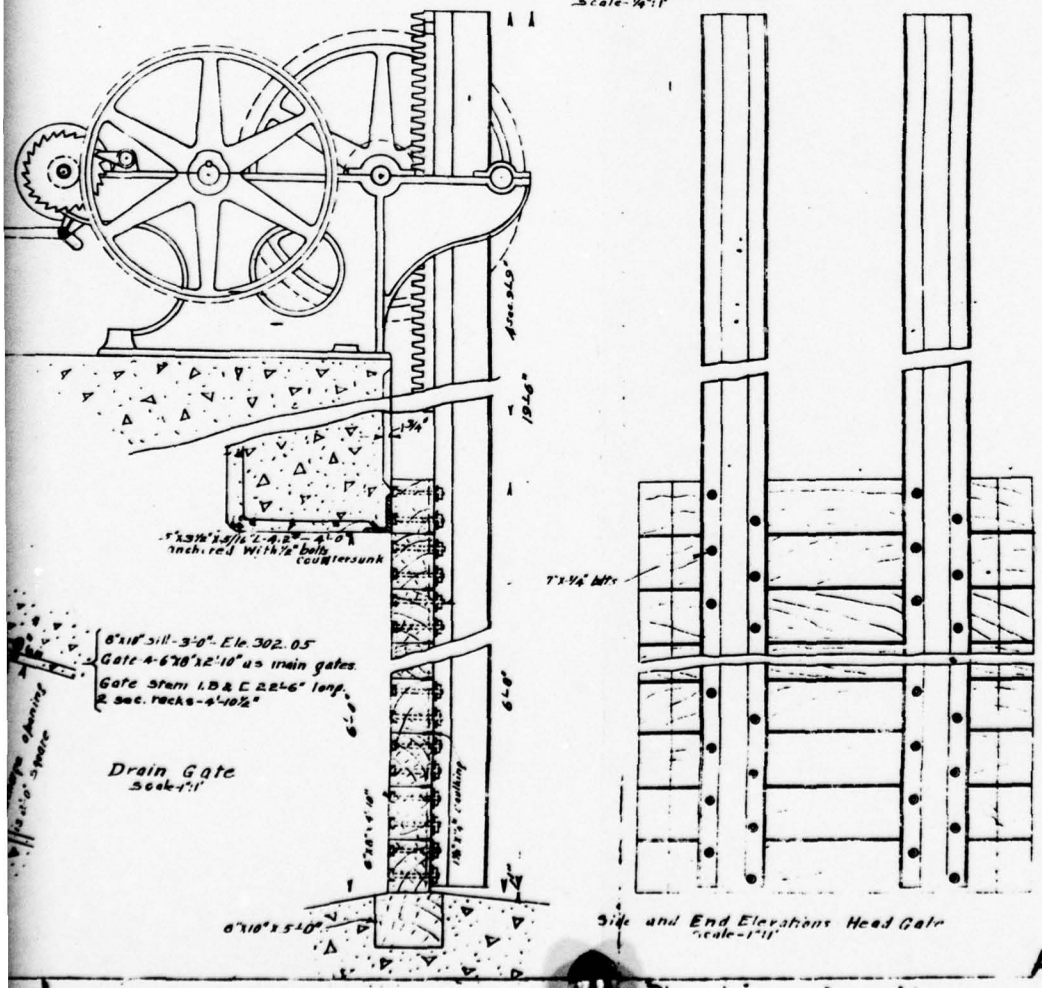
Sheet 2 of 4


Mill Water Intake
Structural Steel for Gate Platform
Back line of Dam
Gate Hoist Anchor Bolts
Top Plan of Head Gates and Forebay
Scale-1/8"-1'
Structural Steel in Rock Platform
Floor Plan of
Present Penstock
Head Gates Openings
Scale-1/2"-1'
Vertical reinforcement-3/4" rods-1'-0" on centers.
Horizontal reinforcement-1/2" rods-1'-0" on centers.
Rail
Diagonal



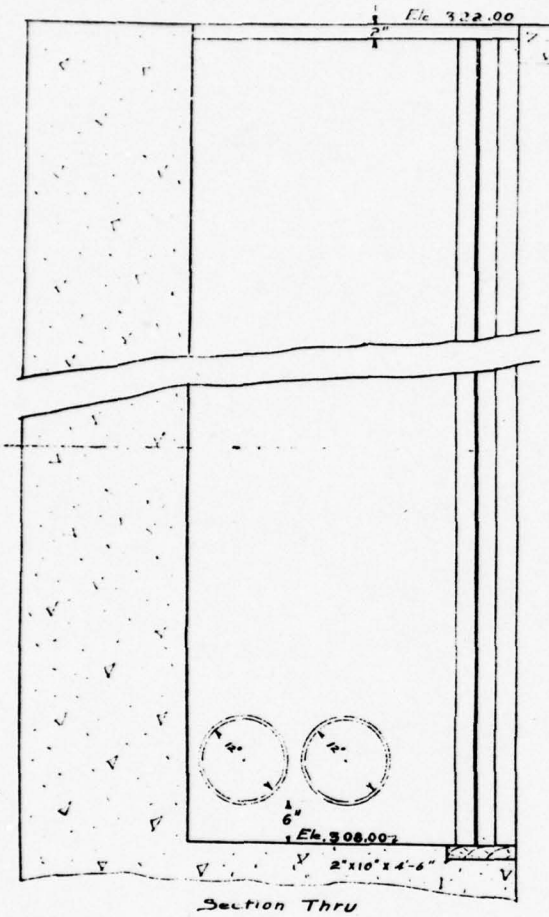
Longitudinal Section Thru Intake on A-A
Scale-1/4":1'

of Head Gates and Forebay
Scale-1/4":1'

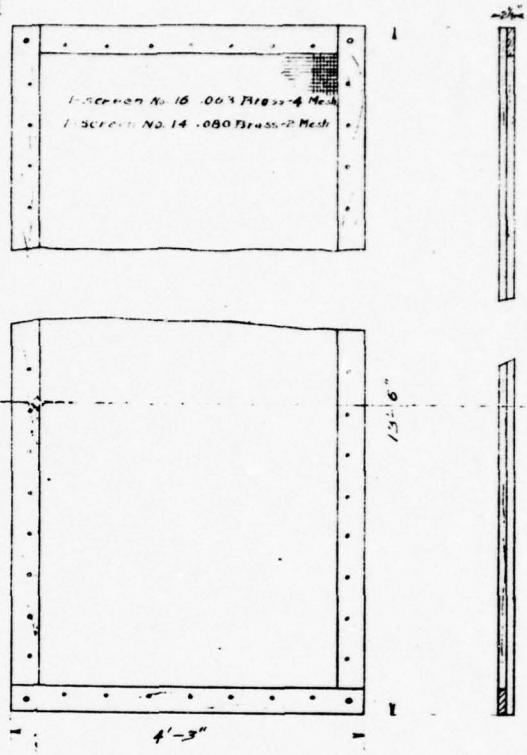


Side and End Elevations Head Gate
Scale-1":1'

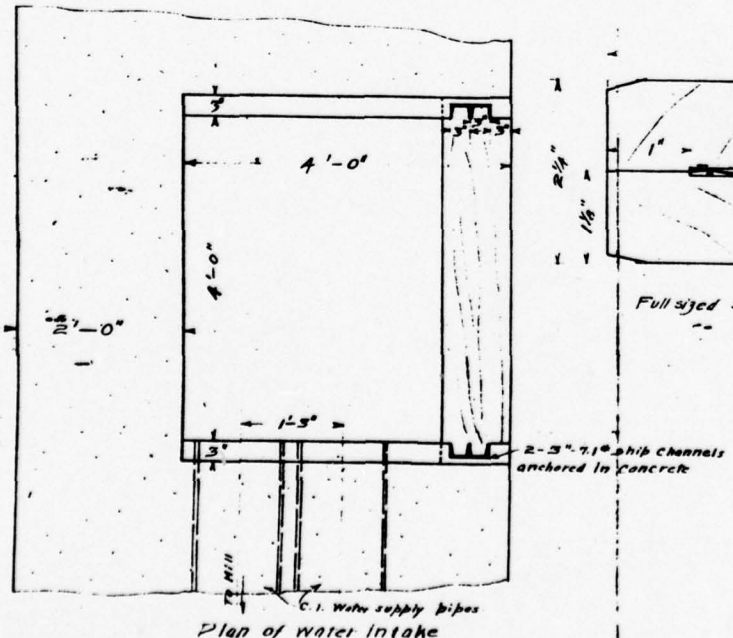
Am. A Sheet 3 of 4 Sheets



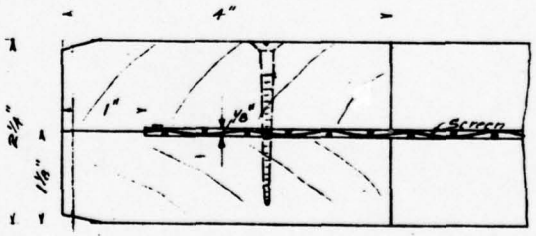
Section Thru



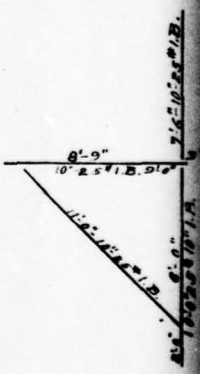
2- Screens for water intake
Scale-1"=1'



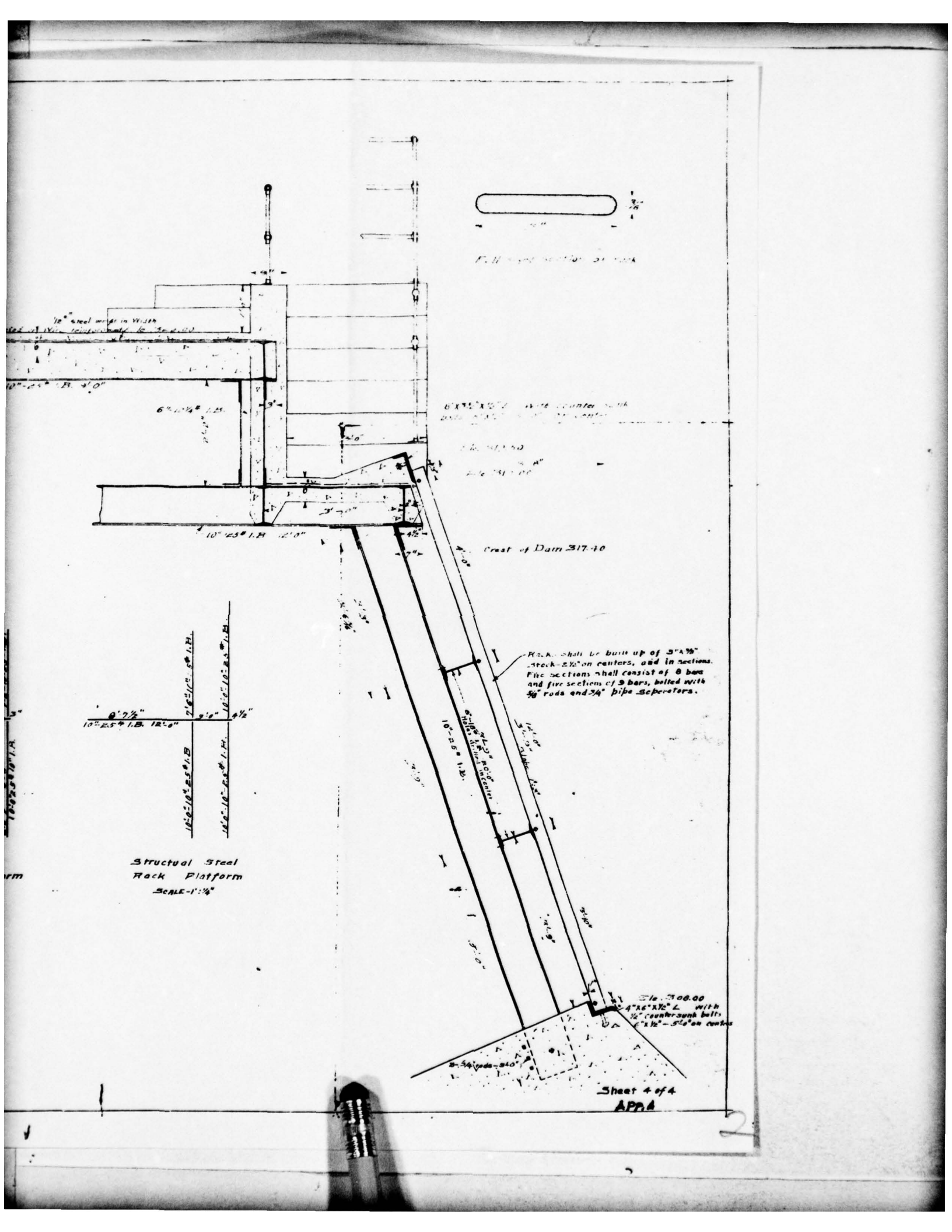
Plan of water intake
Scale-1"=1'



Full sized section thru screen frame



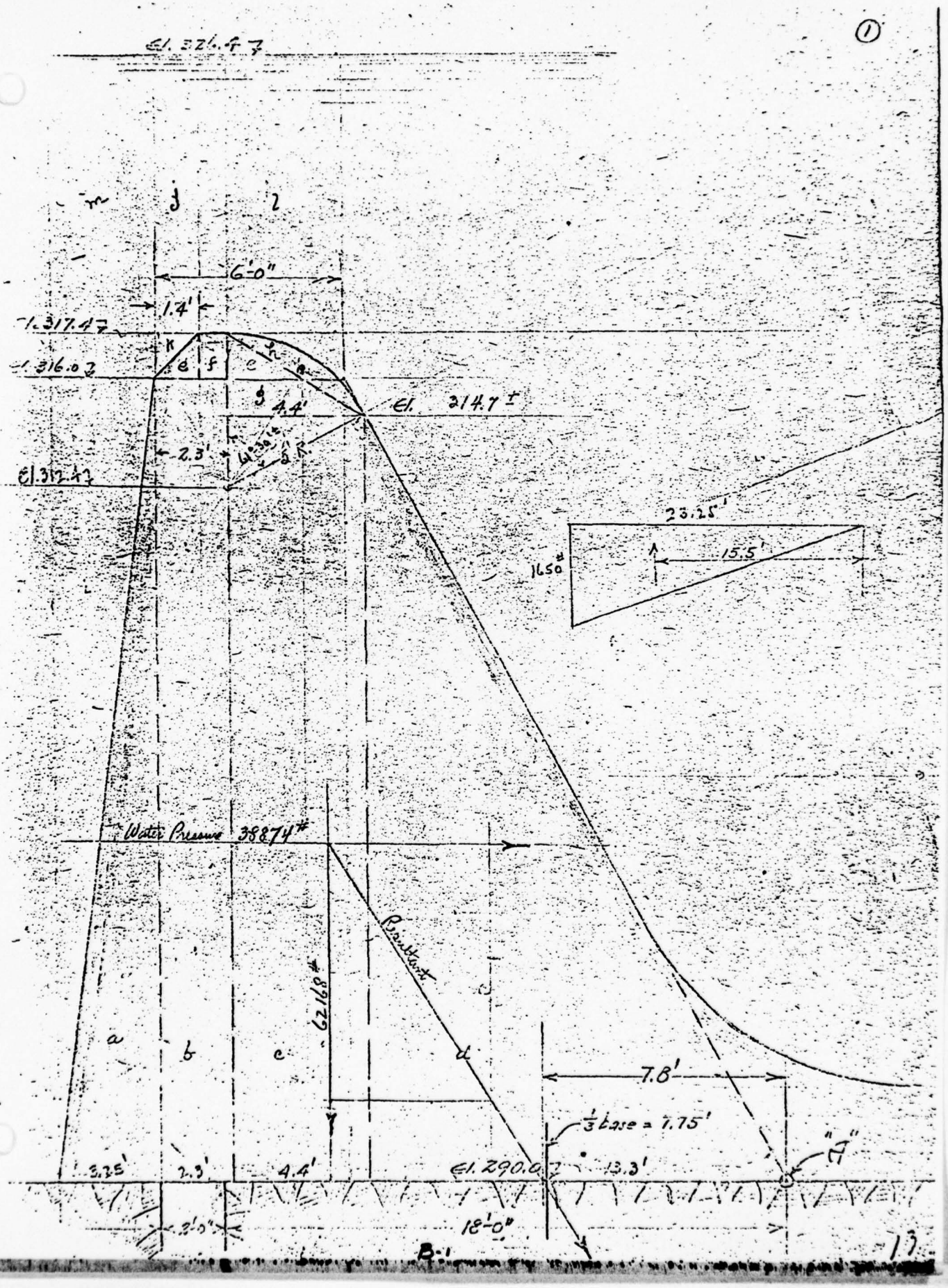
Structual Steel
Gate Hoist Platform
SCALE-1"=1¼"



Structual Steel
Rack Platform
SCALE-1":¼"

APPENDIX B

STRUCTURAL DESIGN ANALYSIS


El. 326.4 ±
6'-0"
1.4'
El. 317.4 ±
El. 316.0 ±
K
e
f
e
4.4'
El. 314.7 ±
2.3'
El. 312.4 ±
23.25'
15.5'
1650#
Water Pressure 38874#
Resultant
62168#
a
b
c
d
7.8'
⅓ Base = 7.75'
13.3'
"A"
3.25'
2.3'
4.4'
El. 290.0 ±
2'-0"
18'-0"
B-1

moments about "A"

(2)

$\frac{3.25 \times 26.0}{2}$	× 140	= 15915	×	21.02	=	124688
2.3 × 26.0	× 140	= 18372	×	18.85	=	157812
1.4 × 24.7	× 140	= 15215	×	15.5	=	235832
$\frac{13.3 \times 24.7}{2}$	× 140	= 72996	×	8.87	=	203975 / 203754
$\frac{1.4 \times 1.4}{2}$	× 140	= 137	×	20.5	=	2811 / 2808
.9 × 1.4	× 140	= 176	×	18.15	=	3194
$\frac{4.4 \times 2.7}{2}$	× 140	= 832	×	16.24	=	13512
78.54 × $\frac{61.5}{360}$	× 140	= 336	×	15.3	=	5140

		Wt			Mom
L	$\frac{3.25 \times 26.0}{2}$ × 62.5	= 2640	×	22.17	= 58528
J	1.4 × 9.0 × 62.5	= 788	×	19.3	= 15208
K	$\frac{1.4 \times 1.4}{2}$ × 62.5	= 61	×	19.54	= 1192
I	4.6 × 9.0 × 62.5	= 2588	×	16.3	= 42184
M	3.25 × 10.4 × 62.5	= 2112	×	21.62	= 45661
		62168			909513
		8189			162773

Water pressure moment

38874 × 10.93 = 424892

484621

$\bar{y} = \frac{484621}{62168} = 7.8' - \frac{1}{8} = 7.75'$

57392

7/23/21

B-2

14

APPENDIX C

HYDROLOGY

SALISBURY MILLS DAM
MOODNA CREEK

AVG. BASIN CHARACTERISTICS: (BASED ON LOWER HUDSON REPORT BY WRE)

$462 + 360 + 369 + 362 + 320 = 1873/5$

Average $640\,C_p = 375$

$1.97 + 1.72 + 1.78 + 2.28 + 2.11 = 9.86/5$

Average $C_t = 1.97$

$$t_p = C_t (L L_{CA})^{0.3}$$
$$= 1.97 (26.03 \times 5.62)^{0.3}$$
$$= 1.97 (4.46)$$
$$= 8.79$$

$$t_r = t_p / 5.5$$
$$= 1.60$$

$$t_{pr} = t_p + .25(t_R - t_r)$$
$$= 8.79 + .25(3 - 1.60)$$
$$= 8.79 + .35$$
$$= 9.14$$

$640\,C_p = 375$

$C_p = .586$

SNYDER PARAMETERS

$T_p = 9.14$

$C_p = .586$

MST
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SALISBURY MILLS DAM
D-A-D RELATIONSHIPS *

AREA	DURATION	DEPTH	%
10 MI^2	6 HR	25.6	109
10 MI^2	12 HR	29.4	125
10	24 HR	32.2	137
10	48 HR	35.9	153
10	72 HR	37.0	157
200	6 HR	17.3	74
200	12 HR	20.6	88
200	24 HR	23.5	100
200	48 HR	26.9	114
200	72 HR	28.1	120
1000	6 HR	12.4	53
1000	12 HR	15.5	66
1000	24 HR	19.0	81
1000	48 HR	22.0	94
1000	72 HR	22.8	97

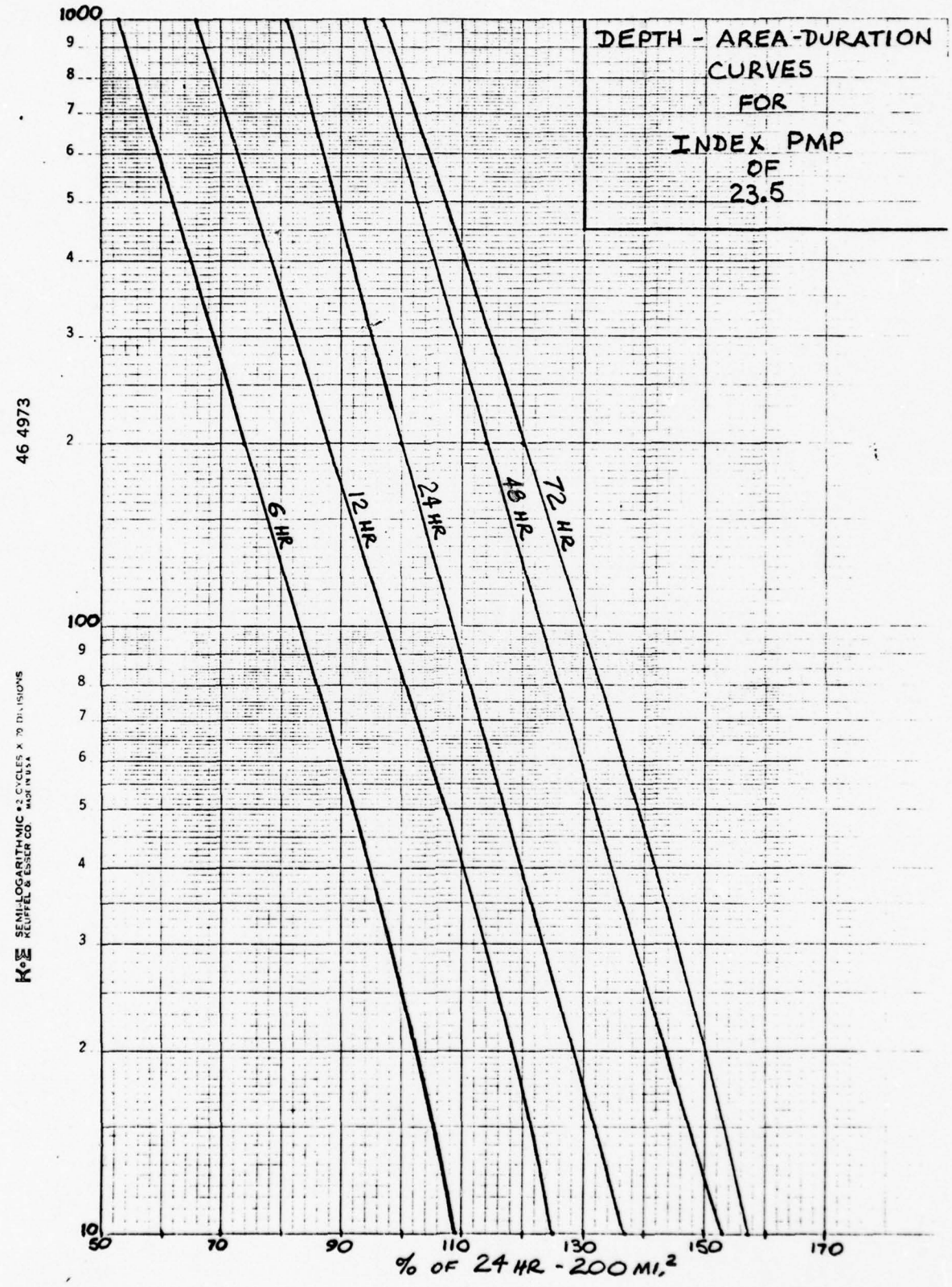
PMP INDEX RAINFALL - 23.5

RATIOS FOR OTHER DURATIONS:

6 HR	79.5
12 HR	94.0
24 HR	105.2
48 HR	119.8
72 HR	126.0

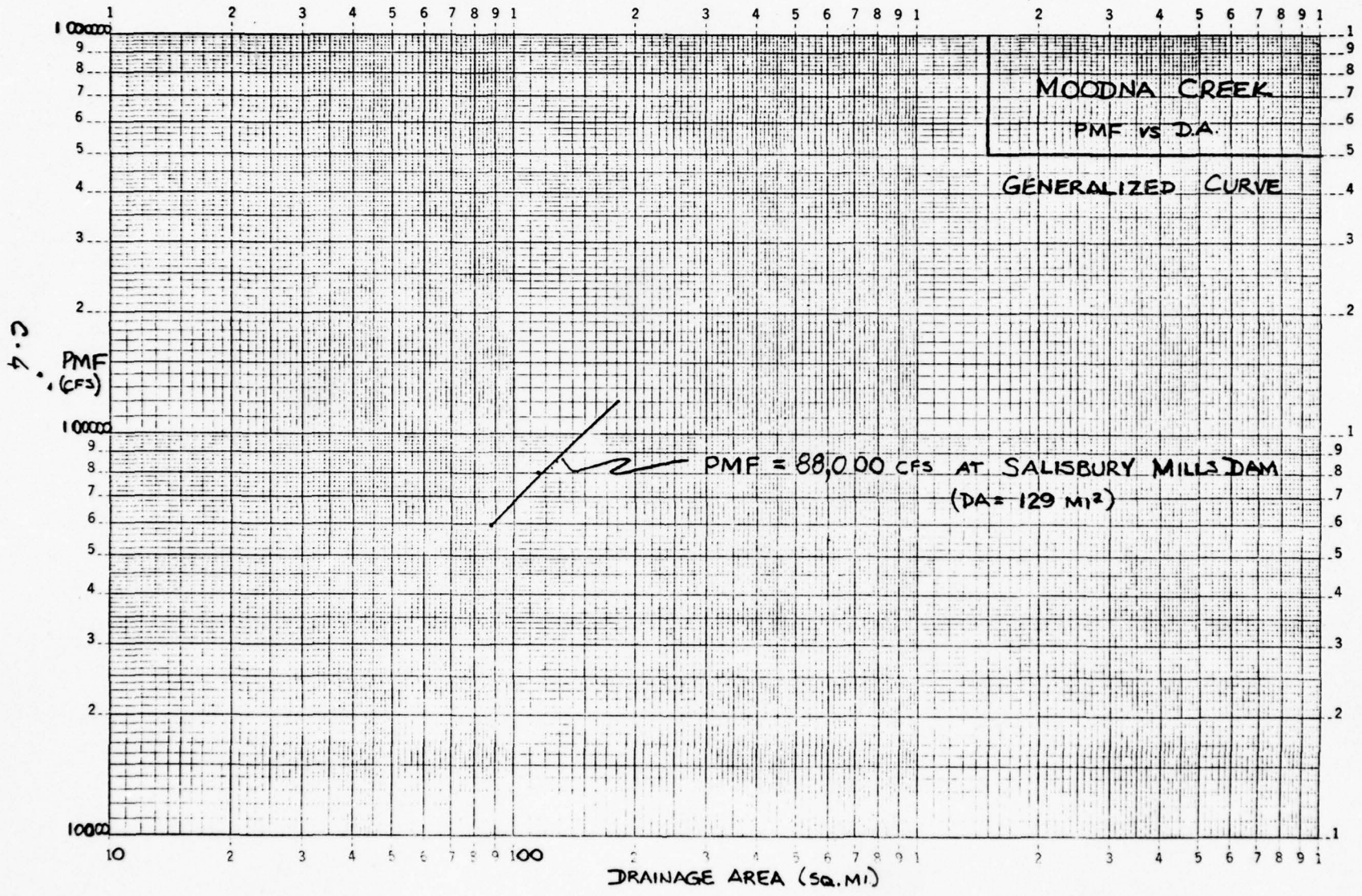
* from "Hydrometeorological Report No. 51"

MST
1/78


DEPTH - AREA-DURATION CURVES FOR INDEX PMP OF 23.5
6 HR
12 HR
24 HR
48 HR
72 HR
1000
9
8
7
6
5
4
3
2
100
9
8
7
6
5
4
3
2
10
50
70
90
110
130
150
170
% OF 24 HR - 200 MI.²
DRAINAGE AREA IN SQ MILES
46 4973
K&E SEMI-LOGARITHMIC • 2 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

K·E LOGARITHMIC • 2 X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 7323



C-4

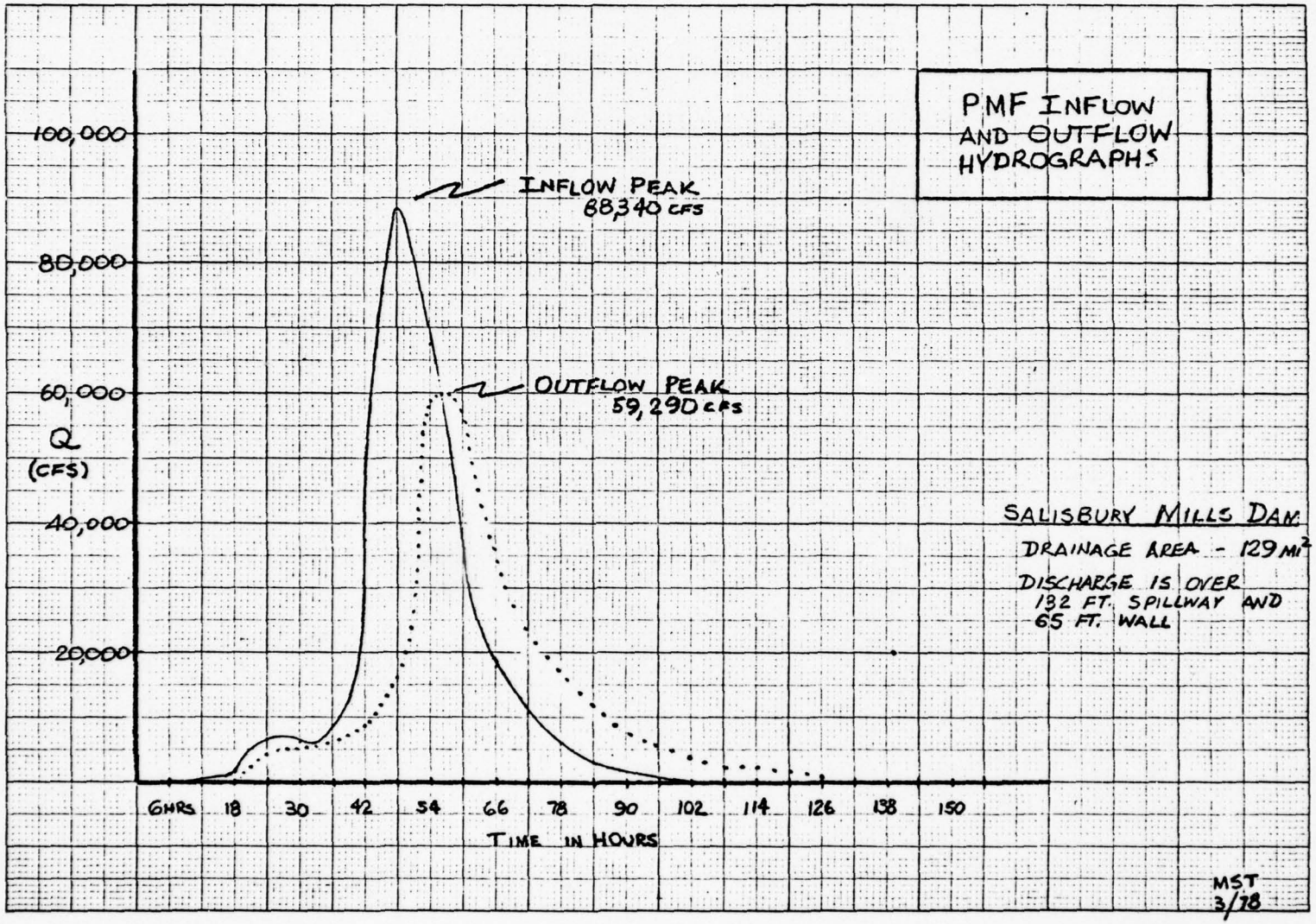
```
ENTER IRSPC AND IRSDM (SUMT) = 0 127
SELECT 1-2 (1=INIT+CONST LOSS, 2=SOIL MOIST LOSS) 1
ENTER INITIAL LOSS(IN) AND CONSTANT LOSS(IN/HR) = 1 .1


SELECT 1-6 (1=TIME INT,2=UNIT H,3=RAIN,4=RUNOFF,5=PNT,6=STOP) 4
ENTER A TITLE PLEASE : SALISBURY MILLS DAM - P M F
ENTER STRTQ,QRCSN,AND RTIOR = 130 130 1

 HR MIN   RAIN   LOSS EXCESS   UNIT HG    RECSN     FLOW
  3   0    .06    .06  0.        808.      130.      130.
  6   0    .06    .06  0.       2846.      130.      130.
  9   0    .21    .21  0.       4791.      130.      130.
 12   0    .21    .21  0.       5162.      130.      130.
 15   0    .75    .58   .17     4116.      130.      267.
 18   0   1.52    .30  1.22     2917.      130.     1599.
 21   0    .10    .10  0.       2067.      130.     4417.
 24   0    .10    .10  0.       1465.      130.     6853.
 27   0    .46    .30   .16     1038.      130.     7257.
 30   0    .46    .30   .16      736.      130.     6232.
 33   0   1.49    .30  1.19      521.      130.     6223.
 36   0   1.49    .30  1.19      370.      130.     8841.
 39   0   5.38    .30  5.08      262.      130.    16770.
 42   0  10.93    .30 10.63      186.      130.    37535.
 45   0    .69    .30   .39      132.      130.    67861.
 48   0    .69    .30   .39       93.      130.    88339.
 51   0    .03    .03  0.        66.      130.    85717.
 54   0    .03    .03  0.        47.      130.    67421.
 57   0    .09    .09  0.                 130.    48686.
 60   0    .09    .09  0.                 130.    34718.
 63   0    .32    .30   .02               130.    24658.
 66   0    .64    .30   .34               130.    17832.
 69   0    .04    .04  0.                 130.    13500.
 72   0    .04    .04  0.                 130.    10541.
 75   0                                   130.     8126.
 78   0                                   130.     5951.
 81   0                                   130.     4254.
 84   0                                   130.     3047.
 87   0                                   130.     2153.
 90   0                                   130.     1526.
 93   0                                   130.      952.
 96   0                                   130.      359.
 99   0                                   130.      279.
102   0                                   130.      223.
105   0                                   130.      196.
108   0                                   130.      177.
111   0                                   130.      163.
114   0                                   130.      153.
117   0                                   130.      146.
120   0                                   130.      130.
123   0                                   130.      130.

TOTAL    25.88  4.94 20.94   27623.     5330.   583751.

                      VOL=   27735.


SELECT 1-6 (1=TIME INT,2=UNIT H,3=RAIN,4=RUNOFF,5=PNT,6=STOP) 6
 STOP
SRU'S:1.3
!OFF
USAGE ON 01/19/78 AT 10:05:41
SRU'S:3.3       ELAPSED TIME: 00:06:06
GOOD BYE.
```

ENTER A TITLE PLEASE : SALISBURY MILLS DAM - S P F
ENTER STRTQ,QRCSN,AND RTIOR = 130 130 1

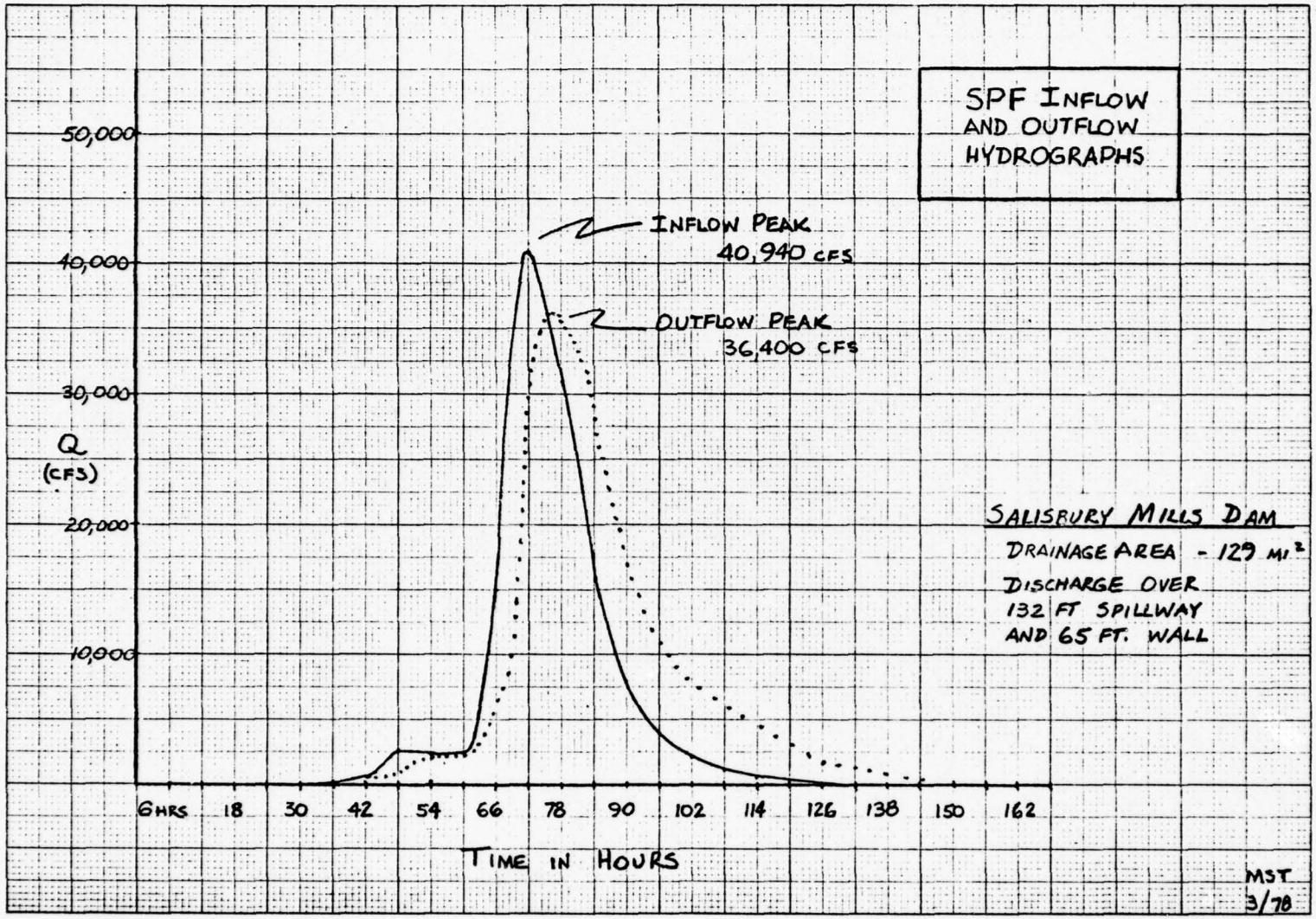
HR	MIN	RAIN	LOSS	EXCESS	UNIT HG	RECSN	FLOW
3	0	.01	.01	0.	808.	130.	130.
6	0	.01	.01	0.	2846.	130.	130.
9	0	.02	.02	0.	4791.	130.	130.
12	0	.02	.02	0.	5162.	130.	130.
15	0	.09	.09	0.	4116.	130.	130.
18	0	.19	.19.	0.	2917.	130.	130.
21	0	.01	.01	0.	2067.	130.	130.
24	0	.01	.01	0.	1465.	130.	130.
27	0	.03	.03	0.	1038.	130.	130.
30	0	.03	.03	0.	736.	130.	130.
33	0	.09	.09	0.	521.	130.	130.
36	0	.09	.09	0.	370.	130.	130.
39	0	.41	.41	0.	262.	130.	130.
42	0	.83	.30	.53	186.	130.	558.
45	0	.05	.05	0.	132.	130.	1638.
48	0	.05	.05	0.	93.	130.	2669.
51	0	.18	.18	0.	66.	130.	2866.
54	0	.18	.18	0.	47.	130.	2311.
57	0	.60	.30	.30		130.	1918.
60	0	.60	.30	.30		130.	2322.
63	0	2.77	.30	2.47		130.	5193.
66	0	5.62	.30	5.32		130.	14993.
69	0	.35	.30	.05		130.	30318.
72	0	.35	.30	.05		130.	40937.
75	0	.01	.01	0.		130.	39832.
78	0	.01	.01	0.		130.	30928.
81	0	.03	.03	0.		130.	22067.
84	0	.03	.03	0.		130.	15699.
87	0	.16	.16	0.		130.	11163.
90	0	.32	.30	.02		130.	7965.
93	0	.02	.02	0.		130.	5729.
96	0	.02	.02	0.		130.	4135.
99	0					130.	3007.
102	0					130.	2178.
105	0					130.	1583.
108	0					130.	1160.
111	0					130.	847.
114	0					130.	629.
117	0					130.	403.
120	0					130.	146.
123	0					130.	140.
126	0					130.	135.
129	0					130.	134.
132	0					130.	133.
135	0					130.	132.
138	0					130.	131.
141	0					130.	131.
144	0					130.	130.
147	0					130.	130.
TOTAL		13.19	4.15	9.04	27623.	6370.	256080.

VOL= 27735.

SELECT 1 / /1-TIME INT 2-UNIT H 3-RAIN 4-RUNOFF 5-PNT /-STOP/ /



C-1



C.8

SALISBURY MILLS DAM

$Q = C L H^{3/2}$

C = 2.64 FOR DAM WALL (ORIGINAL DESIGN ESTIMATE)

C = 3.88 FOR SPILLWAY (ORIGINAL DESIGN ESTIMATE)

$L_{SPILLWAY}$ = 132' L_{WALL} = 65'

	ELEVATION	H	Q_{SPILL}	Q_{WALL}	Q_{TOT}
	290.4	0	0	0	0
	291	.6	240	0	240
	292	1.6	1040	0	1040
	293	2.6	2,150	0	2150
	294	3.6	3,500	0	3500
TOP OF DAM	295	4.6 0	5055	0	5055
	296	5.6 1	6,790	170	6960
	297	6.6 2	8,685	485	9170
	298	7.6 3	10,730	890	11620
	299	8.6 4	12,915	1375	14290
	300	9.6 5	15,235	1920	17155
	301	10.6 6	17,675	2520	20195
	302	11.6 7	20,235	3180	23415
	303	12.6 8	22,910	3885	26795
	304	13.6 9	25,690	4635	30325
	305	14.6 10	28,570	5425	33995
	306	15.6 11	31,560	6260	37820
	307	16.6 12	34,640	7135	41775
	308	17.6 13	37,815	8045	45860
	309	18.6 14	41,085	8990	50075
	310	19.6 15	44,440	9970	54410
	311	20.6 16	47,885	10985	58870
	312	21.6 17	51,415	12030	63445
	313	22.6 18	55,025	13105	68130
	314	23.6 19	58,720	14210	72930
	315	24.6 20	62,490	15350	77840
	316	25.6 21	66,340	16515	82855
	317	26.6 22	70,265	17710	87975
	318	27.6 23	74,260	18930	93190
	319	28.6 24	78,335	20175	98510
	320	29.6 25	82,480	21450	103930

MST
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SALISBURY MILLS DAM

	ELEVATION	STORAGE
	290.4	115
	291	150
	292	190
	293	255
	294	365
TOP OF DAM	295	500
	296	710
	297	850
	298	1050
	299	1290
	300	1588
	301	1950
	302	2495
	303	3150
	304	4000
	305	5050
	306	6500
	307	9250
	308	12400
	309	16000
	310	22500
	311	29000
	312	35500
	313	42000
	314	48500
	315	55000
	316	61500
	317	68000
	318	74500
	319	81000
	320	87500

MST
3/78

SALISBURY MILLS DAM

PMF PEAK - 88,339 CFS

PMF AFTER ROUTING THROUGH STORAGE - 59,291 CFS

ELEVATION OF ROUTED PMF CORRESPONDING TO 59,291 - 311.1 FT ABOVE M.S.L

DAM OVERTOPPED - 16.1 FT

SPILLWAY SURCHARGE - 20.7 FT

SPF PEAK - 40,937 CFS

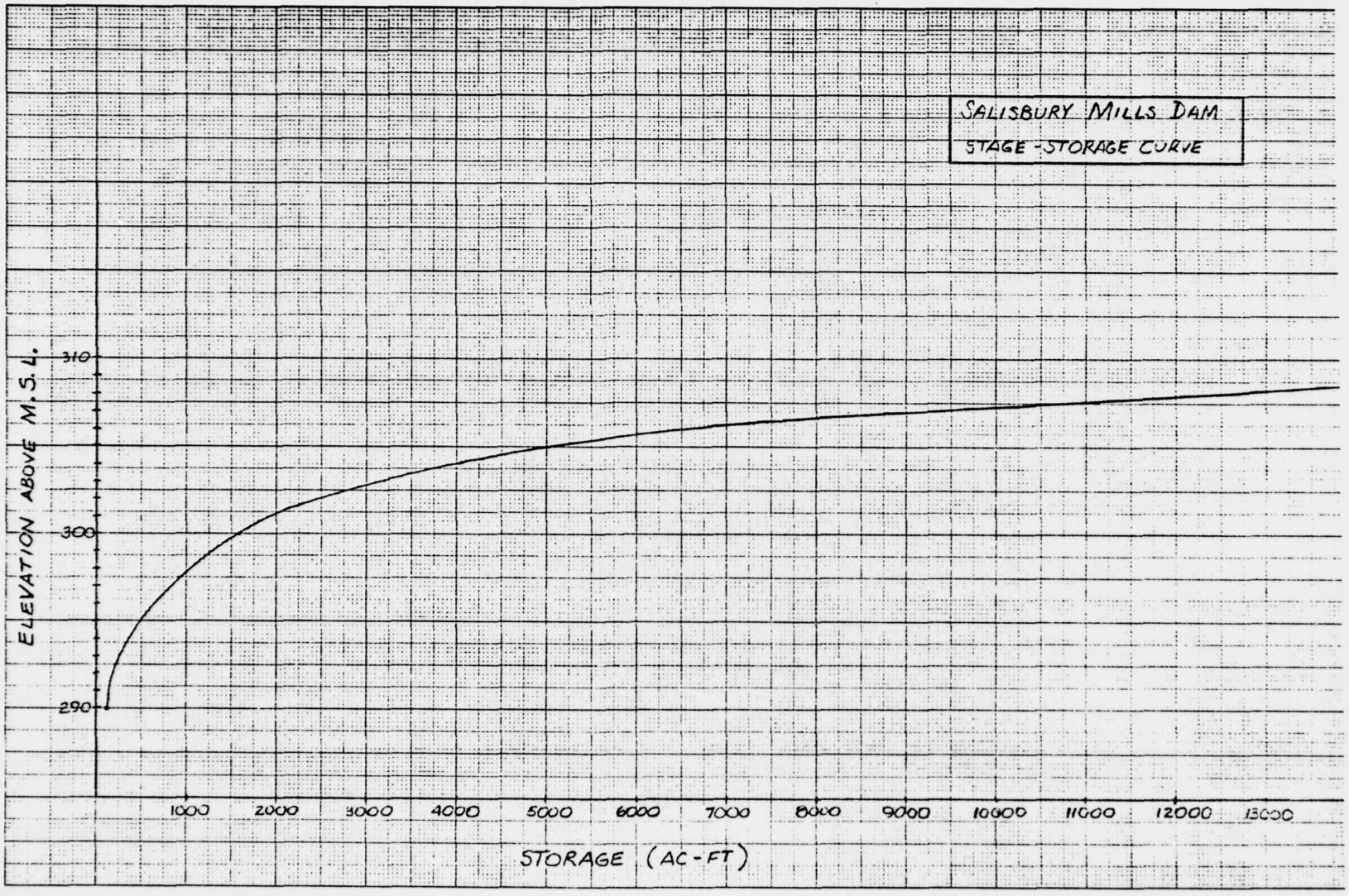
SPF AFTER ROUTING THROUGH STORAGE - 36,432 CFS

ELEVATION OF ROUTED SPF CORRESPONDING TO 36,432 - 305.6 FT ABOVE MSL

DAM OVERTOPPED - 10.6 FT

SPILLWAY SURCHARGE - 15.2 FT

MS
3/7


SALISBURY MILLS DAM
STAGE - STORAGE CURVE
ELEVATION ABOVE M.S.L.
310
300
290
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
STORAGE (AC-FT)

APPENDIX D

GEOLOGY

SALISBURY MILLS DAM

Salisbury Mills Dam is located in the northeastern part of Orange County, about seven miles south of Newburgh and about seven miles west of the Hudson River. The land surface in Orange County is of four main physiographic types: (a) a broad, rolling plain in the central and northeastern part of the county, ranging in altitude from sea level along the Hudson River to about 1,000 feet in the interior; (b) a dissected (Hudson) highland to the southeast; (c) a northeasterly trending belt of narrow ridges and valleys bordering the central plain on the northwest. Different rates of erosion of these tilted layers of hard sandstone and soft shale rock give rise to the narrow ridges and valleys; (d) a small plateau in the extreme western corner of the county. The dam lies in the ridge and valley area--very near to the Hudson highland area.

GENERAL GEOLOGY

The bedrock of Orange County consists of igneous, metamorphic, and sedimentary rocks ranging from Precambrian to Devonian. The rocks are folded and most of them strike northeasterly. Dips range from gentle to steep, and major faults are numerous. The central two-thirds of the county is underlain by gray slaty shale and sandstone. To the southeast the shale is in cont act with elongate belts of infolded and faulted beds of limestone, sandstone, conglomerate, and shale. These rocks lie on and against the crystalline rocks of the Hudson Highlands area, which consist mainly of Precambrian granite.

In the vicinity of the dam site, three types of bedrock formations may be encountered:

1. Folded or layered shale and sandstone and some carbonate rock.
2. Red shale and conglomerate.
3. Tongues of crystalline rock running NE-SW.

The bedrock in most of the county is covered by a mantle of unconsolidated deposits of till and outwash. During the Pleistocene Epoch a south-moving ice sheet covered the county. Erosion by the ice removed the weathered rock that had formed over the bedrock during previous ages. The material picked up by the ice was redeposited on bedrock when the ice melted. These glacial deposits are divided into two types: (A) unstratified ground-moraine deposits(till), deposited directly from the ice, and (B) stratified deposits (outwash), laid down in glacial lakes and streams.

GROUND MORAINE

A thin layer of ground moraine mantles most of the county. The moraine is composed of till (or hardpan), averages about 20 feet in thickness, although the thickness can vary greatly. Drumlins are elongate streamlined hills composed of till, and they are parallel to the direction of ice movement. A number of drumlins were formed in the Ridge and Valley province and can be up to 200 feet thick.

OUTWASH

As melt water drained from the glacier, it carried with it rock debris that had been incorporated in the ice. Gravel, sand, silt, and clay were washed down the stream valleys away from the glacier. The swift-moving streams left layers of relatively clean gravel and sand along their valleys and carried the finer silt and clay particles further down-stream.

APPENDIX E

CHECK LISTS

Check List
Visual Inspection
Phase 1

Name Dam SALISBURY MILLS DAM County ORANGE State NEW YORK ID # 4

Type of Dam CONCRETE - MASONRY Hazard Category 3

Date(s) Inspection 5 JAN. 1977 Weather CLOUDY Temperature 30° 35° F

Pool Elevation at Time of Inspection 390.7 M.S.L. Tailwater at Time of Inspection ~2 FT. ~~M.S.L.~~.

Inspection Personnel:

J. CASPE NYD CofE
A. Petallides NYD CofE
G. Koch NYS DEC
J. Dioguardi CofE
R. Alpern CofE
K. HARMER NYS DEC
M. Thompson CofE

J. Caspe Recorder

Tab L 3

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
ANY NOTICEABLE SEEPAGE Yes.	D/S FACE OF LEFT MASONRY ABUTMENT TIE-IN WALL LOSE OF MASONRY STONE (10 x 6 x 4) and significant seepage	See Photo #5
STRUCTURE TO ABUTMENT/EMBANKMENT, JUNCTIONS	SEEPAGE AS OBSERVED ABOVE ABUTMENTS ARE LEDGE ROCK	
DRAINS	NON - OBSERVED	
WATER PASSAGES	4' DIA. GATED INTAKE CONDUIT & TRASH RACK AT RIGHT ABUTMENT LEADING TO 6' DIA. PENSTOCK & OUTLET. GATE HOIST MECHANISM BLOCKED CLOSED. CONDITION OF PENSTOCK AND OUTLET IS QUESTIONABLE BENEATH DEBRIS FROM DEMOLISHED DAM. OWNER STATES THAT GATE IS OPERABLE. INOPERABLE 48 IN. CONDUIT AT LEFT ABUTMENT.	See Photos #3,2,6
FOUNDATION	COULD NOT BE OBSERVED - APPEARS TO BEAR ON SHALE LEDGE ROCK	

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBERSVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS CONCRETE SURFACES	SOME CRACKING AND SPALLING IS VISIBLE ON CONCRETE SURFACES. WATER FLOWING OVER THE SPILLWAY PREVENTS EXAMINATION OF CONCRETE	SEE PHOTO # 1
STRUCTURAL CRACKING	NON OBSERVED IN CONCRETE. HUGE LOSS OF STONE AT D/S FACE OF LEFT MASONRY ABUTMENT	SEE PHOTO # 5
VERTICAL AND HORIZONTAL ALIGNMENT	NO MIS-ALIGNMENT IS EVIDENT	
MONOLITH JOINTS	NO APPARENT MOVEMENT	
CONSTRUCTION JOINTS	NO APPARENT MOVEMENT	
STAFF GAGE OF RECORDER:	NONE	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	Not Applicable	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	Not Applicable	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Not Applicable	
VERTICAL AND HORIZONTAL ALINEMENT OF THE CREST	Not Applicable	
RIPRAP FAILURES	Not Applicable	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Not Applicable	
ANY NOTICEABLE SEEPAGE	Not Applicable	
STAFF GAGE AND RECORDER	Not Applicable	
DRAINS	Not Applicable	

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	UNABLE TO OBSERVE DUE TO WATER OVERFLOWING. TREE TRUNKS AND BRANCHES ATOP SPILLWAY.	SEE PHOTO # 1
APPROACH CHANNEL		SEE PHOTO # 8
DISCHARGE CHANNEL	ROCK LEDGE - BENDS RIGHT IMMEDIATELY D/S FROM DAM. STEEP SLOPES.	
BRIDGE AND PIERS	NONE OBSERVED.	

GATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE SILL	Not Applicable	
APPROACH CHANNEL	Not Applicable	
DISCHARGE CHANNEL	Not Applicable	
BRIDGE AND PIERS	Not Applicable	
GATES AND OPERATION EQUIPMENT	Not Applicable	

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	NOT OBSERVED	
INTAKE STRUCTURE	NOT MAINTAINED STEEL TRASH RACK & 48" CONDUIT AT RIGHT ABUTMENT	SEE PHOTO # 3
OUTLET STRUCTURE	CONDITION OF DISCHARGE COULD NOT BE OBSERVED NOT MAINTAINED	
OUTLET CHANNEL	60' STEEL PENSTOCK NOT OBSERVED	
EMERGENCY GATE	NONE	

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	LEDGE ROCK STEEP SIDE SLOPES SHARP BEND RIGHT JUST D/S FROM DAM	
SLOPES	SLOPES ARE SHARP AND ARE MOSTLY LEDGE ROCK OVERLAIN WITH THIN OVERBURDEN.	
APPROXIMATE NO. OF HOMES AND POPULATION	AT APPROX 2100' D/S FIRST DEVELOPEMENT HOMES ARE HIGH ON BANK. FLOOD PLAIN ADJACENT TO CREEK THEN SLOPE RISES SHARPLY TO DEVELOPEMENT APPROX. 5-6 RESIDENCES D/S	SEE PHOTO #9

INSTRUMENTATION

VISUAL EXAMINATION	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None	
OBSERVATION WELLS	None	
WEIRS	None	
PIEZOMETERS	None	
OTHER	None EVO	

RESERVOIR

ISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
LOPES	RESEVOIR IS CONTAINED WITHIN STEEP SLOPES OF CLEGE. SLOPES ARE OVERGROWN AND ARE LEDGE ROCK WITH THIN COVER	SEE PHOTO *
EDIMENTATION	NOT KNOWN.	

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM SALISBURY MILLS DAM

ID # 4

ITEM	REMARKS
AS-BUILT DRAWINGS	NONE
REGIONAL VICINITY MAP	✓
CONSTRUCTION HISTORY	NONE
TYPICAL SECTIONS OF DAM	✓
OUTLETS - PLAN	✓
- DETAILS	✓
-CONSTRAINTS -DISCHARGE RATINGS	NONE
RAINFALL/RESERVOIR RECORDS	NONE

ITEM	REMARKS
DESIGN REPORTS	N/A
GEOLOGY REPORTS	N/A
DESIGN COMPUTATIONS	None Available
HYDROLOGY & HYDRAULICS	None Available
DAM STABILITY	None Available
SEEPAGE STUDIES	
MATERIALS INVESTIGATIONS	None Available
BORING RECORDS	None Available
LABORATORY	None Available
FIELD	None Available
POST-CONSTRUCTION SURVEYS OF DAM	N/A
BORROW SOURCES.	N/A

ITEM	REMARKS
MONITORING SYSTEMS	N/A
MODIFICATIONS	None
HIGH POOL RECORDS	N/A
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	N/A
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	N/A
MAINTENANCE OPERATION RECORDS	N/A

ITEM	REMARKS
SPILLWAY PLAN	✓
SECTIONS	N/A
DETAILS	
OPERATING EQUIPMENT PLANS & DETAILS	N/A

CHECK LIST
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: 129 SQ MILES

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): 290.4 115 AC-FT.

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): 290.4 · 115 AC.FT.

ELEVATION MAXIMUM DESIGN POOL: 300'

ELEVATION TOP DAM: 295

CREST:

a. Elevation 290.4'
b. Type OGEE · CONC. SPILLWAY
c. Width
d. Length WEIR LENGTH 132 FT
e. Location Spillover CENTER OF DAM
f. Number and Type of Gates UNGATED

OUTLET WORKS:

a. Type ONE 4' DIAMETER CONDUIT
b. Location RIGHT ABUTMENT
c. Entrance inverts GATE WITH DEBRIS REMOVAL
d. Exit inverts
e. Emergency draindown facilities NON-FUNCTIONAL

HYDROMETEOROLOGICAL GAGES:

a. Type NONE
b. Location
c. Records

MAXIMUM NON-DAMAGING DISCHARGE: ~ 12,000 CFS

E-15

APPENDIX F

PERTINENT CORRESPONDENCE

299 BROADWAY
NEW YORK, N.Y.

FLOWER BLDG.
WATERTOWN, N.Y.

WILLIAM T. FIELD
CONSULTING ENGINEER

RECVD	18 May 21			
DIRECTORY			SIGN	DATE
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Watertown, N. Y., May 17, 1921

Conservation Commission
Albany, N. Y.

Re-Proposed dam for Holden Paper Co., of Newburg, N. Y.

Gentlemen:-

Inclosed herewith please find application for approval of the proposed dam for the Holden Paper Co., of Newburg, N. Y., at their Salisbury Mills plant and accompanying the same you will find one set of four sheets of plans for the proposed structure, also one set of specifications and a copy of the Schunemunk Quadrangle of U.S. Geological survey covering the territory in question.

So far as can be ascertained no dam on this stream near the proposed site has ever failed.

The failure of a dam at the site of the proposed dam, would discharge the imponded water through a gully or deep revine, considerable distance from habitations.

The capacity of the Imponded Reservoir is practically the same as that of the present wooden structure as it is proposed to build the same just down stream from the old dam, and it has the same length of spillway at the same elevation of crest.

There will be no water on the down stream face of the dam.

The general rock formation is what is sometimes called "Utica Slate" The plane of the formation is practically parallel to the line of the proposed dam and dips to the northwest at an angle of about 30 degrees.

F-1

9

On top of the rock formation is a thin covering of clay loam. This, however, does not affect the dam as the abutments are anchored into the rock on both sides. (?)

The gravity type of dam is used and is designed for extreme high water record against over-turning as shown on the ~~stress~~ sheet accompanying plans. Due to the character of the foundation no attention was necessary to a sliding tendency. (?)

The underseepage is prevented by a cut-off wall which will extend down to such a depth as determined necessary upon excavation.

The apron will be set into the rock as shown on the plans, to a sufficient depth to prevent undermining.

The earth embankments are above the high water level except on the southerly side which at present has a retaining wall which will be maintained. (?)

Any further information which you may deem necessary I will be glad to furnish and trust that this matter will receive your immediate attention.

Very truly yours,

Wm. T. Field

WTF/HDP

May 23, 1921.

Subject: Reconstruction of
Salisbury Mills Dam;
Moodna Creek;
Application No. 412.

Mr. William T. Field,
Consulting Engineer,
Watertown, N. Y.

Dear Sir:

Receipt is acknowledged of your letter dated May 17, 1921, together with the data to accompany same as described therein.

In the second paragraph of your letter appears the brief statement that- "the failure of a dam at the site * * * would discharge the impounded water through a gulley or deep ravine, considerable distance from habitations." The information conveyed thereby is hardly sufficient to warrant a determination that a failure could not endanger life nor cause material damage to the property of others. If, therefore, in your opinion, such is the fact, you should furnish more detailed information relative thereto.

A rapid preliminary examination of your plans indicates several details in connection with which additional information (and possibly revisions) would be required:

First: As to spilling capacity, such letter dated May 17, 1921, merely states that "the capacity of the impounded reservoir is practically the same as the present wooden structure as it is proposed to build the same just down stream from the old dam, and it has the same length of spillway at the same elevation of crest."

F-3

6

Additional information should be furnished to fully support your design as to spilling capacity. The portions of the watershed immediately south and southeast from the site rise with rather steep slopes to high elevations, thus indicating that the runoff following severe storms would doubtless be flashy;

Second: State probable water surface area of pond, if the water surface elevation were level with the lip of the spillway at the proposed dam; state also the probable maximum water surface area of the impounded pond at times of maximum flood; state the probable maximum average depth of the impounded pond during periods of maximum flood; state probable maximum volume of water which would be impounded by the proposed dam, if the water surface were level with its crest, and also at times of maximum flood;

Third: Your letter dated May 17, 1921, indicates that the subfoundation material is "Utica Slate". However, the cross section at the dam site (on sheet 2 of your blue prints) does not extend the full width of the valley and up to the elevation of the top of the dam at the south end; A portion of the proposed spillway dam, as shown by the blue prints, would be located upon a rock surface(sloping down stream), into which it is shown to be imbedded to a depth of about 2 feet at the downstream toe. The question naturally arises whether or not such a depth of embedment would insure safety against sliding under all conditions, and whether a suitable quality of rock for a subfoundation would be available at that depth; why is cutoff wall under the spillway section not shown beneath the upstream heel, rather than at a distance several feet downstream from same; sheet 3 of the blue prints shows that the proposed concrete intake chamber is to be constructed upon the surface of rock sloping rather steep in a downstream direction. The concrete forming this portion of the dam should be embedded to a satisfactory depth to insure proper subfoundation conditions and prevent any possibility of a failure by sliding.

Mr. William T. Field,
May 23, 1921.

As to the submission of samples for testing - if the Portland cement to be used in mixing the concrete for the several portions of the structure is to be a well-known standard brand, we would not require the submission of samples of same for testing. It seems important, however, that samples should be furnished showing the true character of the sand to be used for such concrete, and for this purpose half a cement-bag of material should be promptly shipped, using the enclosed material-tags (Nos. 168 and 169).

Very truly yours,

ELLIS J. STALEY, Commissioner,

By

DIVISION ENGINEER.

JWH-HB.
Encs. (2)
Sa C.

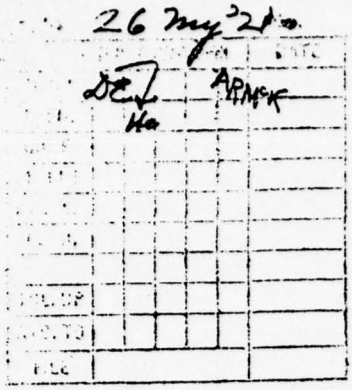
F-8

8

296 BROADWAY
NEW YORK, N.Y.

FLOWER BLDG.
WATERTOWN N.Y.

26 May 21



WILLIAM T. FIELD
CONSULTING ENGINEER

Watertown, N. Y., May 25, 1921

Subject: Reconstruction of Salisbury Mills Dam; Moodna Creek; Application No. 412

A. H. Perkins, Div. Engineer.
Conservation Commission
Albany, N. Y.

Dear Sir:-

Replying to your communication of May 23d, the banks of Moodna Creek immediately down stream from the site of the proposed dam of the Holden Paper Co., are 25 feet high and for a distance of about a mile are at least 15 to 20 feet high on the southerly side and 10 feet high on the northerly side, with perceptible rise from thereon northerly. For the second mile below the site of the proposed dam the banks on either side are at least 10 feet hight or higher. The stream follows through quite a valley in its entire course.

In replying to your request for additional information, first, as to the spilling capacity, the drainage area of Moodna Creek above the proposed dam is approximately 100 sq. miles and as shown on sheet No. 2 of blue prints the extreem record of high water is about 5 feet above crest of dam. As there are no stream gagings for this drainage area I have depended largely upon our high water records for the necessary information in this regard, and the extreem high water mark as shown is exceptional. Second, the probable water surface area of pond with water surface elevation level with the lip of the spillway at the proposed dam is appro-

ch more 133 Sq M.

ximately 800,000 sq. feet. The probable maximum water surface area of the imponded pond at times of maximum flood ie at the estreem flood heighth as shown is not to exceed 1,200,000 sq. feet. The probable maximum average depth of the imponded pond during period of maximum flood is about 10 feet. The probable maximum volume of water which would be imponded by the proposed dam if the water surface were level with its crest about 5,000,000 cu. ft. and at times of maximum flood about 10,000,000 cu. ft.

Third The cross section at the dam site (on sheet 2 of blue prints) doew not extend the full width of the valley and up to the elevation at the top of the dam on the south end, as that is shown on details for the proposed intake which is adjacent to the south bank upon which is situated the mill buildings. With the dip of the rock as described in my letter of May 17th, there is no reason to expect other than a suitable quantity of rock for a sub-foundation upon excavation for the dam, and as such structure is a gravity type with the rough rock surface, and embeddedabout 2 feet into the rock, there would be no question as to safety against sliding, the dip of the rock being up-stream and at a considerable angle would insure a favorable sub-surface, although, if you so desire anchorbolts could be inserted for the base.

The cutoff wall under the spillway section is not shown beneath the upstream heel for the reason that the line of said heel would be more like a curve than a straight line, and for that reason the cutoff wall was placed near the heel,but online with the back of the crest, although, should you desire the location could be changed to meet your views.

In regard to the proposed concrete intake chamber this would be placed on a rough rock surface and the said chamber would, in fact, consist of a reinforced concrete box which would be filled with water

under which conditions it is doubt-ful as to any possibility of sliding. However, this could be imbeded further into the rock or anchored by bolts should you so desire.

As to the submission of samples for testing such sand as we would use, it would be obtained from banks of a state accepted materials, which have been submitted and passed in connection with highway construction.

Very truly yours,

Wm. T. Field.

WTF/HDP

F.B

5

STATE OF NEW YORK

CONSERVATION COMMISSION

ALBANY

June 8, 1921.

Mr. A. H. Perkins, Division Engineer,
Conservation Commission,
P R E S E N T:

Dear Sir:-

On June 7th I inspected dam #492 Lower Hudson at Salisbury Mills, owned by the Holden Paper Company of Newburgh, N. Y. The present dam is a frame timber dam with a masonry abutment on the north end and dry masonry wall along the south shore about 8 feet in height. The bank on the north shore is about 25 feet in height with a very steep slope without croppings of slate ledge up to 8 and 10 feet and the slate ledge probably extends to this height along the stream. The bed of the stream is entirely of slate ledge, the strata being 6 to 12 inches thick and sloping down in an upstream direction about 30 degrees under the dam. The north abutment is 2 feet 8 inches higher than the crest for a length of 10 feet, at which point there is an emptying gate consisting of a pipe about 5 feet in diameter 10 feet below the crest of the spillway. The abutment at this point is built 1 foot 10 inches higher and runs for a length of 35 feet. At this point there is a very large oak tree, the roots of which act as a protection for an additional height of 4 feet and the bank runs up to the road at a slope of 2 horizontal to 1 vertical. The road is about 12 feet vertically above the abutment and 25 feet horizontally.

The new dam should be calculated for an extreme high flood, which would be about 9 feet above the crest and the banks should be protected on both sides for this same height. Not having an auto I could not examine the stream for any distance below, but from the dam it does not appear that there could be any damage by failure. The U-shaped abutment on the north end was evidently so constructed to protect the oak tree mentioned above.

Respectfully submitted,

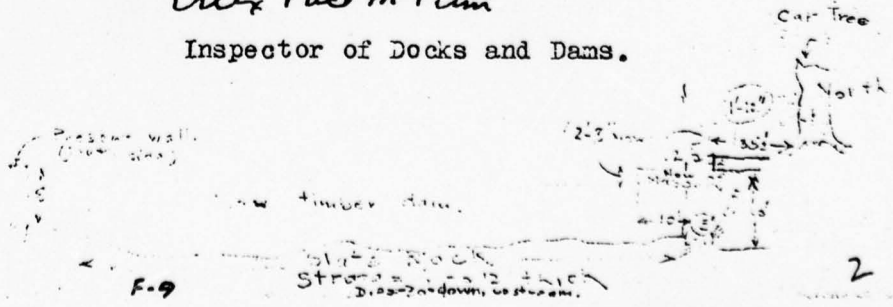
Alex Rice McKim

Inspector of Docks and Dams.

McK/C.

2

Noted June 14'21
A.H.P.



[illegible] BROADWAY
NEW YORK, N.Y.

FLOWER BLDG.
WATERTOWN, N.Y.

WILLIAM T. FIELD
CONSULTING ENGINEER

Watertown, N. Y., June 11, 1921

Subject; Reconstruction of
Salisbury Mills Dam;
Moodna Creek;
Application No. 412

A. H. Perkins, Div. Engineer

Conservation Commission

Albany, N. Y.

Dear Sir:-

On May 25th, I wrote you in reply to your communication of May 23d, furnish-ing you with additional information as requested, but as yet I have heard nothing further from you regarding the matter.

Will you kindly look into this as we are very anxious to get the proposition in shape to submit for bids, which we had arranged to do this month.

Thanking you for your assistance in connection therewith, I am

Very truly yours,

Wm. T. Field.

WTF/HDP

REC'D 12 JE 21 No.

CONSERVATION COMMISSION						DATE
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REFD.						
CONF.						
PR. RPT.						
PR. RET.						
ACKN.						
FOL. UP						
ATD. TO						
FLE						

F-10

Dam File

Dam #492 Lower Hudson.

June 17, 1921.

Subject: Reconstruction of Salisbury Mills Dam
Moodna Creek - Application #412.

Mr. William T. Field,
Consulting Engineer,
Watertown, N. Y.

Dear Sir:-

On May 18, 1921, we received your letter-report describing the proposed reconstruction of the Salisbury Mills dam, which letter was accompanied by a copy of the contract and specifications to be followed during construction work, and by prints of sheets 1 to 4 of the plans proposed in connection therewith. A preliminary study and examination of the project was promptly made and, under date of May 23, 1921, we replied, indicating that the application for such a project could not ordinarily be dismissed except after confirmation of a concise and detailed statement indicating with reasonable certainty that the failure of the structure under worse conditions would not endanger life nor cause serious damage to the property of others.

The design of the dam and adjacent structures, which would resist hydrostatic pressure, depends primarily upon a determination of the maximum probable water surface elevation to be expected immediately above such dam. Your plans only provided for a spillway opening 132 feet long and 4.6 feet deep. In our letter to you, dated May 23d, we, therefore, wrote as follows:

> "As to spilling capacity, such letter dated May 17, 1921 merely states that 'the capacity of the impounded reservoir is practically the same as the present wooden structure, as it is proposed to build the same just downstream from the old dam, and it is the same length of spillway at the same elevation of crest.' Additional information should be furnished to fully support your design as to spilling capacity."

F-11

8

The plans submitted by you show no provision for a flood gate and our records in connection with the existing dam indicate that, at its northerly end, there is a waste opening 4 feet in diameter provided with gate and hoisting mechanism, and further - that the head upon such opening would be about 12 or 13 feet before the abutment was overtopped. With the water surface of the pond at elevation 322 (your datum), it would, therefore, appear that with such flood gate open, the existing dam might have passed a somewhat greater volume of water than would the proposed structure. The deck slope of the present timber dam (1-1/2 on 1) also indicates that an appreciably higher discharge coefficient might be assumed for it than for the concrete section now proposed.

In such letter dated May 23d we also called attention to the portion of the watershed immediately south of the site, which rises with rather steep slopes to high elevations - thus indicating that the run-off following severe storms would doubtless be flashy. The stream beds draining the greater area (about 20 square miles) of such high and steep portions of the watershed, flow generally in a northerly direction and join the main channel at points within about 3 miles of the Salisbury Mills dam. The whole watershed, as represented upon the U.S.G.S. maps, is considerably more than 100 square miles, which was the area stated in your reply.

The statements in your letter dated May 17th indicated that the stream bed slope was such immediately below the site proposed that there would be no water against the downstream face of the dam. In your letter dated May 25th you estimated that, with a water surface elevation in the pond equivalent to 5 feet above the crest of the dam, 10 million cubic feet of water would be held back (about 230 acre feet). Our investigations and study indicate that much greater floods than 5,000 cubic feet per second (the approximate volume seemingly provided for) may be expected at Salisbury Mills, and, with a spillway as proposed, considerable higher water surface elevations would result.

Our maps show that, below the proposed site, the waters of Moodna Creek pass beneath two railway viaducts, and several highways, and over one or two other dams, - without reaching flat areas of sufficient size to cause any considerable reduction of such a flood wave as would result from a serious failure of such dam.

Some years ago Mr. Robert E. Horton reported that, by actual observations of the depth of water on a dam near Kingston, N. Y., and careful measurements and computations, it was determined that the flood rate from a small watershed was approximately 3200 cubic feet per second per square mile. Although the flood rate from any considerable area of the highest and steepest portions of the Moodna Creek watershed would probably not reach any such extreme, we should keep in mind the fact that the careful studies made by the Miami Conservancy District engineers indicate: that the storms over the

southeastern portion of New York State, appear to exceed those for the Miami valley, both as to volume of precipitation and frequency. In the absence of controverting evidence as to the relation of the proposed structure to the question of public safety, this Division would not feel justified either in dismissing the application for approval of your plans, nor in recommending their approval until revisions have been made indicating that the structure would be safe when passing a flood of at least 17,000 cubic feet per second.

If the base of the dam is to be well set down into unweathered solid rock; to such a depth that a considerable volume of such solid rock would remain in place above the elevation of the base of the dam section, and in a direction downstream therefrom, then there would not appear to be danger of failure by sliding. If, however, the section is not to be thus embedded, it should be investigated as to its safety in this particular, and in addition - a fairly liberal allowance for the coefficient of upward static pressure upon the base of the several sections should be assumed.

On June 8th our Inspector reported upon his recent examination of the site for such dam and the conditions in the vicinity. Such report confirmed the conclusions previously arrived at - that maximum floods would rise to a depth of about 9 feet above the present dam. While he saw no indications that a failure would cause material damage immediately below the structure, unfortunately it was not practicable for him to observe conditions along the entire remaining length of the stream bed.

Sample tags for submitting specimens of sand were enclosed with our letter to you dated May 23d and you have replied that the material to be used for such work would come from banks which have been "State accepted." Unless such evidence is furnished, that your application may be later dismissed, we would still prefer that you submit half a cement bag full of sand, which should show the true character of the material to be used in the concrete.

Very truly yours,

ELLIS J. STALEY, Commissioner,

By

Division Engineer.

JHF/C.

4 & Ch.

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ARMcK-H

July 20, 1921

Mr. William T. Field,
Flower Building,
Watertown, N. Y.

Dear Sir:-

The Conservation Law has been changed since July 1, 1921 so that the supervision of docks and dams is now under the charge of the State Engineer and Surveyor.

Concerning the reconstruction of Salisbury Mills dam on Moodna Creek, Application No1 412, Dam No. 492, Lower Hudson watershed, this application has not been approved. We do not find in the correspondence an answer to the letter of June 17, 1921 asking for additional information. Is it proposed to construct this dam in the near future or is the project abandoned?

Very truly yours,

FRANK M. WILLIAMS

State Engineer

By ....
Deputy State Engineer

7

F-14

WILLIAM T. FIELD
CONSULTING ENGINEER

492 L H

Watertown, N. Y., July 21, 1921.

A. H. Perkins, Div. Eng.
Conservation Commission
Albany, N. Y.

Subject: Reconstruction of
Sallisbury Mills Dam.
Moodna Creek
Application No. 412

Dear Sir:-

Some time ago I requested the Superintendant of the Holden Paper Co. at Salisbury Mills to ship you the sand as per your instructions, but I have heard nothing from you as to whether or not this had been received and whether or not, if received, has met with your approval.

In your letter of June 17, 1921, in paragraph three, you state that the plans which I made, showed no provision for a flood gate and that your records in connection therewith indicate that at the northerly end there is a waste opening four feet in diameter, provided with a gate etc. This waste opening in the northerly end of the present structure has been used, so far as I have been able to find, merely for the purpose of draining the pond and has been more of a detriment than a help, in that, by reason of its crude construction, has caused considerable leakage. However I can provide for the installation of a gate on the northerly end of the proposed dam of the same size, four feet by six feet, as those proposed for the intake on the southerly

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side and this, together with the two foot gate opening from the fore-bay will give more than ample protection in times of high water.

The installation of such a gate together with hoist mechanism on the northerly end of the proposed dam would insure good working conditions which certainly does not exist in the present waste gate.

I fully appreciate the data as collected by Mr. Robert E. Horton, with whom I have several times been associated in work at the Miami ~~Conservation~~ Conservancy District engineers. It is my wish to have this dam meet all practical conditions. I notice that in the next to the last paragraph of your letter of June 17th, in which you conclude that a maximum flood would rise to a depth of about nine feet above the present dam. This, I take it, is in reference to the present crest of dam. However, if you will note on my proposed design, the north and south abutments are at an elevation of 322 in comparison with the crest of dam 317.40 and are so designed that in case of a flood the water can pass over the entire structure after reaching the heighth of 322.0 thereby increasing the length of the crest at least sixty(60) feet.

The elevation of 322.40 shown on the stress sheet in extreem high water was taken from information obtained on the ground, at the site of the present dam and the proposed new dam, as the maximum high water mark which had been reached in the existance of the mill in this location. However the design of this dam will be safe in either case.

Will you kindly advise me as to whether or not the samples of sand were duly received and if so did they meet with your approval and whether with the suggested changed the application would meet with your approval.

WTF/HDP

Very truly yours,

W. T. Fuld, 12

ARMcK-H

July 22, 1921

Mr. William T. Field,
Flower Building,
Watertown, N. Y.

Dear Sir:-

Yours of July 21, 1921 received, concerning Dam No. 492, Lower Hudson watershed, at Salisbury Mills, Application No. 412.

We believe the spill should be able to accommodate a flood of at least 16,000 c.f.s. Will you send a corrected print of sheet 2 of 4 showing the spillway area and overturning forces on the section, marking off the forces.

Are the banks above the dam protected for such a flood so no damage can be done?

No sand sample has been received at our laboratory. The sample should be about 1/2 a cubic foot.

Very truly yours,

FRANK M. WILLIAMS

State Engineer

By .....
Deputy State Engineer

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WILLIAM T. FIELD
CONSULTING ENGINEER

Watertown, N. Y., July 22, 1921.

Frank M. Williams , State Engineer
Albany, N. Y.

Subject: Reconstruction of Salisbury Mills dam.
Hoodna Creek
Application No. 412

Dear Sir:-

Yesterday, July 21st, I addressed a letter to the Conservation Commission concerning the reconstruction of the Salisbury Mills dam, a copy of which is herewith enclosed.

Due to circumstances beyond our control, this matter has been somewhat delayed. However I trust that we can carry it through now immediately, and I assure you of my co-operation with the same.

Very truly yours,

Wm. T. Field

WTF/HDB

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ARMcK-M

July 28, 1921

Hon. Frank M. Williams,
State Engineer and Surveyor,
Albany, New York.

Dear Sir:

The Holden Paper Company of Salisbury Mills, have made application through their Engineer, Mr. William T. Field of Watertown, for permission to reconstruct their dam #492 Lower Hudson at Salisbury Mills.

I inspected the site of this dam on June 8, 1921, and found the bed was entirely of slate ledge, the strata being 6 to 12" thick and sloping down in the up-stream direction about 30 degrees under the dam.

The plans have been gone over by Junior Engineer Westfall and have been checked by me. I find the dam as proposed to have ample dimensions for the protection of life and property and therefore recommend your approval.

Yours very truly,

Inspector of Docks and Dams.

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ARMcZ-M

July 28, 1921

Mr. W. F. Field,
Flower Building,
Watertown, New York.

Dear Sir:

The application and plans for the reconstruction of Dam #492 Lower Hudson at Salisbury Mills, owned by the Holden Paper Company of Salisbury Mills, New York, have been approved by the State Engineer and Surveyor and permission up to November 1st, 1922 is hereby given for the construction of said dam in accordance with the approved plans, in so far as the matter involves the jurisdiction conferred upon him by Section 22 of the Conservation Law. This approval shall not be deemed to authorize any invasion of property rights, either public or private, in carrying out the above work; nor to create any claim or demand against the State of New York; nor be considered as authorizing the flooding of State lands, nor in acquiescing in the flooding of such State lands.

Please advise the State Engineer and Surveyor at Albany, New York when any section of the sub-foundation will be excavated and ready for the concrete base.

Very truly yours,

FRANK M. WILLIAMS,

State Engineer,

BY_____
Deputy State Engineer.

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FRANK M. WILLIAMS, STATE ENGINEER — F. P. WILLIAMS, SPECIAL DEPUTY STATE ENGINEER

STATE OF NEW YORK
DEPARTMENT OF STATE ENGINEER AND SURVEYOR
SENIOR ASSISTANT ENGINEER'S OFFICE

TESTING LABORATORY
STATE ENGINEER'S DEP'T
ALBANY, N. Y.

SUBJECT:

Aug. 23, 1921.

MEMORANDUM ON SAND FOR USE ON DAM AT SALISBURY MILLS, N. Y.

We received on August 12 a sample of sand from H$_o$lden Paper Company at Salisbury Falls, N.Y., for use on a dam on the Otterkill.

The results of the tests show that this sand should give very satisfactory results when used in concrete. The sample was very clean, was composed of uniformly graded grains of sandstone and limestone. It would be still better were there more fine grains.

Respectfully,

Russell S. Greenman

Sen. Asst. Engineer
In charge of Tests.

Per McKeever

F-21

August 25, 1921 ARMcK-M

Report of sand
inspection Salisbury
Mills dam-492 Lower
Hudson:

Attention Mr. W.F. Field,
Engineer for Dam Construction

Holden Paper Company,
Salisbury Mills, N.Y.

Gentlemen:

The following is a report of the sand sent to our laboratory for testing for the construction of the dam at Salisbury Mills:

The sand is composed mainly of uniform size grains of sandstone and limestone, some quartz and feldspar. The percentage of voids was 32.4 and of loam 2.2. The average of five tests by weight of three natural sand and one of cement gives a tensile strength of 405 lbs. to the square inch, whereas our standard sand gives a test of 309 lbs. The results of the test show that this sand should give very satisfactory results when used in concrete. The sample was very clean and composed of uniformly graded grains and would be still better where there are more of the fine grains.

Yours very truly,

FRANK M. WILLIAMS
State Engineer.

BY _____
Chief Clerk.

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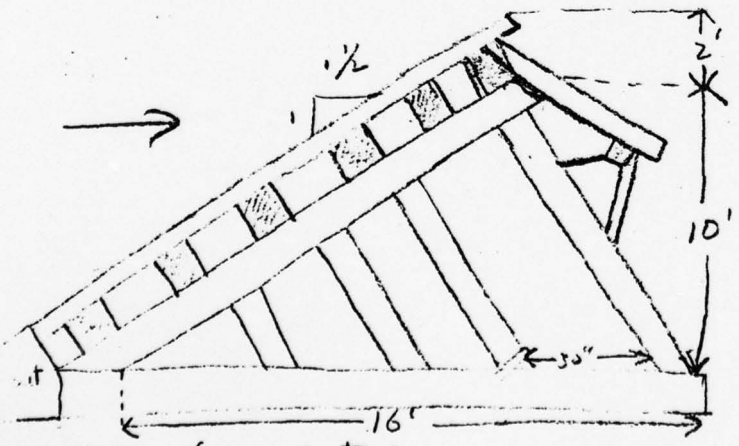
195T

19-20-11-3000 (16-10-32)

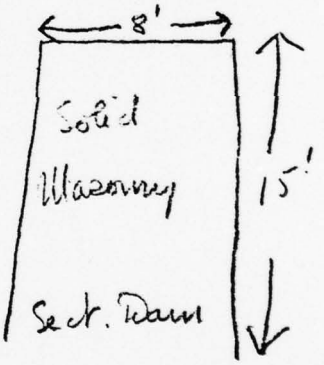
Fill out a form as complete as possible for each dam in your district and send to State Conservation Commission, Albany, N. Y.

1. Name and address of owners Arlington Paper Co.
2. Date of construction 1864
3. Uses of impounded water Water Power
4. Character of foundation bed Rock
5. Material of waste spill ~~40' x 3'~~ Wood
6. Length of waste and depth below dam ~~110'~~ 90' x 3'
7. Total length of dam including waste 110'
8. Material of dam Masonry
9. Discharges, size and location 4' iron pipe.

Below sketch section of waste and section of dam, with greatest heights and top thickness and bottom thickness. On opposite side sketch general plan of dam and give distance from a bridge or from a tributary stream.



Ledge foundation
Sect. of Spill. Timber 1'x1'



Nearest town Saling Corners Mills

7/10/12 A. F. Pickernell

(Signature, address and date.)

1192 L+

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Form W-07
Rev. 980

Received May 17, 1921
by Wm. T. Field.

Filed May 18 1921 Dam 492 Low H. Watershed

Disposition Ap July 26 1921 Serial No 412

Inspected site 19

Foundation seen 19

Construction O. K. 19

STATE OF NEW YORK
Conservation Commission
MAY 18 1921
FILED

APPLICATION FOR CONSTRUCTION OR RECONSTRUCTION OF A DAM

Watertown, N. Y.
(Address of Applicant)

Application is hereby made to the Conservation Commission of the State of New York, in compliance with the provisions of Chap. LXV of the Consolidated Laws, the Conservation Law, for approval of the detailed specifications and plans, marked Proposed dam for Holden Paper Co., at Salisbury Mills, Orange County, New York.

herewith submitted for the { ~~construction~~ / reconstruction } of the dam located as stated below. All provisions of law will be complied with in the erection of the said dam.

LOCATION AND GENERAL DATA

Site of dam on Moodna Creek
(Name of stream)

a branch of Hudson River
(Name of stream)
within the limits of the town of Blooming Grove, County of Orange.
in the Village of Salisbury Mills.
(Give approximate distance from well-known bridge, dam, village or mouth of stream, so that the exact site may be readily located on map of the State)

Purpose of dam To replace an old wooden dam.

Reasons for making changes in existing structure to save water, to save cost of upkeep of old wooden dam and to increase the efficiency of the intake.

May 17, 1921
(Date)

{ Signature of applicant } Wm. T. Field.

Consulting Engineer
(A person executing for Applicant should indicate his title or authority)

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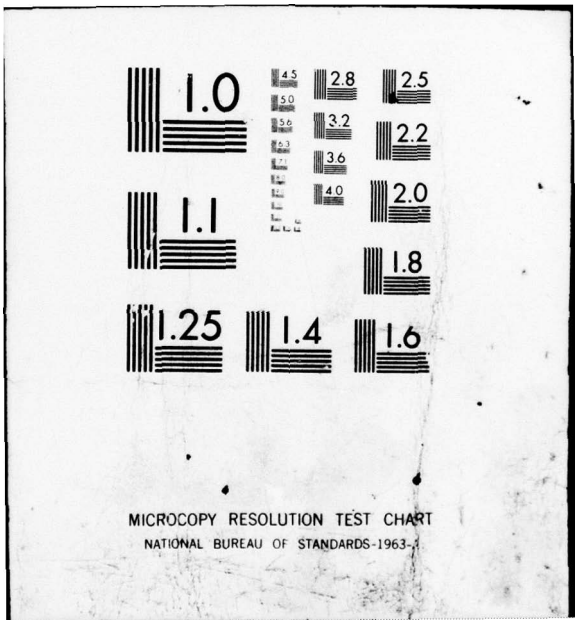
AD-A071 698 ARMY ENGINEER DISTRICT NEW YORK F/G 13/2
NATIONAL DAM SAFETY PROGRAM. SALISBURY MILLS DAM, INVENTORY NUM--ETC(U)
APR 78 C H BENN

UNCLASSIFIED NI

2 OF 2
AD
A071698

END
DATE
FILMED
8-79
DDC


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
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3.2
3.6
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5.0
5.6
6.3
7.1
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

INSTRUCTIONS TO APPLICANTS

APPLICATION: Fill in the blank spaces provided on the front of this sheet and send it to the Conservation Commission, Albany, N. Y.

INFORMATION:

1. *Description:* If the importance and magnitude of the proposed structure do not warrant the submission of detailed data as outlined below, each application must be accompanied by information indicating for each part of the dam having a different cross section — (a) the character of the foundation upon which it is to rest, (b) the material or materials with which it is to be built, (c) the shape and dimensions proposed for the section of maximum height, (d) the lengths in the clear and depths of the proposed wasteway openings, etc.

2. *Failure:* A. If a dam on the same stream near the proposed site, has ever failed, state — (a) the probable depth and volume of the pond thus released, (b) the nature and extent of the resulting damage, if any, and (c) whether a failure of the proposed structure would result in more or in less damage than such previous failure, and why.

B. If the failure of the proposed structure could not cause loss of life or damage to the property of others, furnish detailed statement supporting such a contention.

PLANS: Each application should ordinarily be accompanied by plans of proposed structure consisting of —

(A) Location map (U. S. Geological Survey sheet or other map with location of proposed structure indicated thereon).

(B) Map of proposed reservoir showing (a) flow line, (b) buildings, (c) adjacent elevations to height of maximum probable flood.

(C) Complete working drawings or such drawings as will make clear the dimensions of all parts of the structure (including automatic flashboards), and its connection to existing structures, if any. Show — (a) plan, (b) section, (c) elevations, (d) nature of natural foundations, (e) stress diagrams or other analysis showing the adequacy of the strength of the structure, etc.

(D) Each map and plan shall have a title showing (a) names of owner and engineer, (b) name of county and town in which dam is to be located, and (c) nearest hamlet or railroad station.

REPORT: Each application should ordinarily be accompanied by a report by a competent engineer, substantially as follows:

1. *Capacity of Impounded Reservoir:* (To crest of waste weir, and to maximum flood flow line.)

2. *Adequacy of spillway:*
   - (A) Give estimate of (a) maximum flood and describe (b) method of estimating.
   - (B) Give resulting height on spillway crest.
   - (C) Give resulting depth of water on down stream side of dam, if known.

3. *Natural foundations:*
   - I. General statement of geology of vicinity as affecting the foundation of the dam.
   - II. Description and results of subsurface surveys.
   - III. Describe fully materials in natural foundation.
     - (A) Rock —
       - (a) Mineralogy
       - (b) Stratification
       - (c) Seams and other physical characteristics
       - (d) Thickness of strata
     - (B) Earth —
       - (a) Physical composition
       - (b) Physical characteristics (perviousness, hardness, homogeneity, water bearing, effect of exposure to air and water, etc.)

4. *Stability:*
   - I. Describe (a) type of dam and (b) how destructive forces are met.
   - II. For each part of dam having a different cross section give methods of computation and results as to —
     - (A) Overturning
     - (B) Sliding
     - (C) Under-seepage
     - (D) Undermining (sufficiency of apron and wash wall)
     - (E) Sloughing of earth embankments
     - (F) Overtopping of earth embankments

SPECIFICATIONS: Furnish a copy if available.

SAMPLES: When so instructed, send sample of sand and of each lot of cement to State Testing Laboratories, Albany, N. Y., using shipping tags which will be furnished you.

INSPECTION: State how inspection of work is to be provided for during construction.

R C. Form 513 — 11-14-17-1000 (6-11290)

STATE OF NEW YORK
DEPARTMENT OF STATE ENGINEER AND SURVEYOR
TESTING LABORATORY
ALBANY

Tests of Sand from Hudson Valley Co. ~~bank at~~ Salisbury Mills N. Y.,
for use on Contract ~~No.~~ Dam at Salisbury Mills on Otterkill Creek, Division.
~~Cons.-Con~~ Contract Sample No. 168 taken —; received at Laboratory Aug 12; made up Aug 16
Sand is composed mainly of uniform size grains of sandstone and limestone with some Quartz and feldspar.)
Percentage of Voids 32.4; Loam 2.2; Organic matter —
Parts of sand to cement by ~~bulk~~ weight :— 3 sand to 1 cement. Per cent water used 11
Temperature of water used in mixing 71 Fahr. Briquettes kept in moist air 24 hours and then immersed.
Cement used in tests, Standard Blend This cement tested as follows:—
Sets (determined by Vicat needle):—Initial, { in 1.55 min. / Minim. requirement 45 min. }; hard, { in 3.20 min. / Max. requirement 600 min. }
Constancy of Volume Tests:—Normal air Good: Normal water Good; Accelerated Good
Fineness (per cent passing standard sieve No. 100) 97.8 (Requirement, 92%)
" (" " " " " No. 200) 81.8 (Requirement, 78%)

TENSILE STRENGTH IN POUNDS PER SQUARE INCH						SIZE OF SAND	
STANDARD SAND		NATURAL SAND		WASHED SAND		PASSING SIEVE	
7 Days	28 Days	7 Days	28 Days	7 Days	28 Days	No.	Per Cent
321	454	390				4 (1/4")	100.0
320	460	410				6 (1/8")	98.4
292	462	421				10	83.0
294	450	422				20	41.6
318	448	384				30	20.2
1545	2274	2027				40	11.4
309	455	405				60	5.2
						74	2.8
						100	1.6
						200	0.8

Remarks:

I CERTIFY *that this is a true abstract taken from the records of tests* August 23 1921

Russell S. Greenman
Sr. Ass't Engineer in Charge of Tests

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